The OIL WEEKLY

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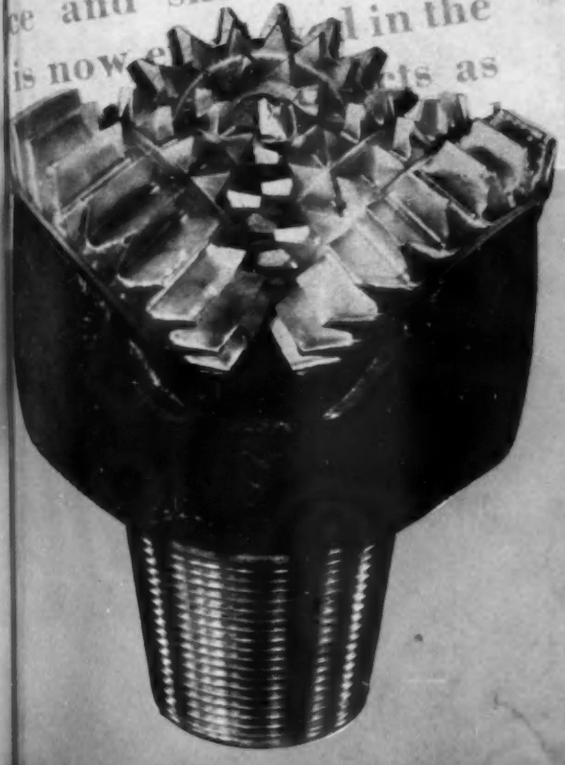

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THE OIL WEEKLY

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LOOKING AHEAD

...with the Editor

SHORTAGE of critical metals make it essential that the industry extend the life of equipment and parts far past their previous normal span of usefulness. No tool, no machine, no instrument should be condemned today as totally unfit for additional service until it has ben rigidly inspected and found beyond salvage.

Valves, big and little and of various types, are prominent among the items that the industry is able to work over and return to the field for further use. The story of how one company is putting new life in old gate valves will be told pictorially in next week's issue of THE OIL WEEKLY.

PLAN AHEAD

FOR "CATERPILLAR" DEALER SERVICE

THESE WAR DAYS, all of us have to plan our time, just as we figure ahead so we won't be caught without gasoline—or butter—or shoes. It's even more important to anticipate the needs of your "Caterpillar" Diesel equipment.

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A little forethought now may save you a lot of time and expense. Take a look at your calendar. Figure when you will best be able to spare your "Caterpillar" Diesel. Then get in touch with your "Caterpillar" dealer and arrange a date beforehand. A quick inspection will enable him to tell whether a complete overhaul is needed—whether any parts must be replaced—or whether minor adjustments will answer the purpose. If parts are necessary and orders are placed well in advance, he'll be ready to give you prompt service on the day you've set.

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The Changing Panorama

Fewer Restrictions On Drilling Likely

BEFORE long the industry very probably will find itself provided with sufficient steel to drill a materially larger number of wells than it has been permitted to drill since Pearl Harbor. It appears that the low ebb in drilling has been reached, and that henceforth it will improve. A decidedly more optimistic viewpoint of the industry's possibilities of getting enough steel to conduct more exploratory and production operations prevails among PAW officials. It may even become possible for PAW to further relax PAO-11 spacing rules. In fact, PAW at present is engaged in a study of fields to determine information on which such relaxation may be based.

The improvement is due largely to a better appreciation among WPB representatives of the importance of petroleum and their recognition that the industry needs larger quantities of materials if it is to be able to produce the quantities of oil required by military operations. Although the amount of steel available for distribution by WPB has not changed appreciably, the industry is receiving a larger allotment of the nation's steel capacity during the fourth quarter of this year, As consumption of petroleum grows, the need for the industry to drill more wells will become more acute, and this is expected to result in a steady growth of the quantity of steel allotted to oil.

August Production Highest in History

THE United States produced 2,419,500 barrels more crude oil in August than in any previous month in history. A total of 130,702,500 barrels were produced during the month, in contrast with the previous all-time peak of 128,293,000 barrels produced during December, 1941. Production in August 3,561,300 barrels higher than in the preceding month of July.

Production in August averaged 4,216,200 barrels daily, against 4,101,300 barrels per day in July, 3,995,000 barrels daily in June, and 4,138,500 barrels in December, 1941. Thus, daily average production during the month was 77,700 barrels larger than the preceding peak, 114,900 barrels greater than in the preceding month, and 221,200 barrels more than in June. These figures reflect the sharply rising rate of production in the United States. A further gain of approximately 125,000 barrels per day is scheduled for September under PAW allocations, which would represent a gain of about 350,000 barrels per day over the June rate of producing crude oil.

Enlarged Production Makes Low Prices More Intolerable

THE oil resources of Texas are being "raided at ridiculously low prices," asserted C. P. McGaha, independent operator and president of the National Stripper Wells Association. "This situation will become increasingly intolerable," continued McGaha, "as the demand for Texas oil mounts, while at the same time the price remains frozen under an artificial price ceiling established by OPA. The oil which we are selling today for $1.25 per barrel cannot possibly be replaced for a cost of less than $2.00 per barrel.

"With all other vital war materials the matter of supply receives first consideration while price is of secondary importance. This has been evidenced by unofficial statements out of Washington to this effect: "Get the material and to hell with the price." But it has not been so with oil—the most vital of all war commodities. The supply of oil is not unlimited—its availability is failing fast and its shortage may result in a national scandal. All because of the ill-conceived policy of OPA in prohibiting an adequate price to be paid for crude oil.

"The tremendous amount of oil that is being taken out of Texas each day at below-cost prices amounts to nothing more or less than a 'steal' from its owners. And the State of Texas, itself, is probably the biggest loser in this 'steal' since it is losing approximately $35,000 per day in direct taxes alone, to say nothing about the loss in indirect revenues. (This calculation is based on an under-price of only 35 cents per barrel as recommended by the Petroleum Administrator for War). If the real value of this oil were compensated for with an adequate price, the additional revenue in taxes to the State of Texas would be approximately 2½ million dollars per year."

Crude Prices Next National Scandal?

THE recent statement by Frank Phillips, chairman of Phillips Petroleum Company, that "no one in Washington can justify the government's obstinate refusal to increase the price of crude," bespeaks the universal conviction of the entire industry. It is a theme song that can not be sung too loudly or too often, or by too many top men in petroleum circles—practical men, that is to say.

Phillips has bluntly, but albeit logically, asserted that if Washington officials had lifted the price of crude months ago we would not now be having so much gasoline rationing problems. It is his opinion that the lack of oil for all-out prosecution of the war will be the "next national scandal," and that we are standing now in the very vestibule of such a scandal.

In the light of coming events it is well that such statements appear on the record, and that everyone of like belief join the corps of drum beaters—for the opposition is on the march. Witness the official statement of the OPA labor committee that Secretary Ickes, in backing the demand for a 35-cents-per-barrel increase, is trying to put across a new "big steal" formula. This attitude can only mean that labor leaders want a petroleum shortage, for their own special reasons. This constitutes a challenge, and the challenge should not be permitted to go unanswered.

In this connection, the recent strong statement of Standard Oil Company (New Jersey) that only higher crude prices can assure an adequate supply is an event of considerable significance.

Sharp Growth in Imports Indicated

THAT more foreign oil is now reaching the shores of the United States is indicated by trends of foreign oil stocks in recent weeks. In contrast with earlier small but steady drafts on stocks of foreign oil, recent weeks have witnessed a material increase in these inventories. During the 7 weeks between July 7 and August 14, foreign stocks were reduced by 219,000 barrels, which represented an average withdrawal of 30,000 barrels per week. In the following two weeks, 1,137,000 barrels have gone to storage,

a weekly average increase of 568,500 barrels.

Prior to the recent increase stocks of foreign oil in the United States were down to practically zero. On July 17 they totaled but 69,000 barrels. Additions since that time, and especially in recent weeks, sent the quantity of foreign oil in storage to 1,251,000 barrels by August 28.

Encourage Domestic Industry Too

Dear Mr. Dudley:

I have read with a great deal of interest the lead article on page 9, of the August 9, 1943, issue of THE OIL WEEKLY, entitled "Action Needed Now." The basic thought in the editorial referred to is that it will be necessary in the not too far distant future to import oil into the United States to help fill our national demand and accordingly that our government should begin now to act in the encouragement of the development of foreign reserves by American companies.

No patriotic American will oppose anything that he believes essential to the preservation of our nation or to its welfare. Certainly in the serious war in which we are now engaged, no one will oppose the securing of oil from which to make the petroleum products necessary for the use of and to support our military forces from whatever source that may be available.

I am fully cognizant of the fact that your publication has pointed out and stressed from time to time, the necessity of an increase in the price of domestic crude oil as an incentive to increased activity on the part of the domestic oil producers in exploratory effort, in secondary-recovery operations, in drilling development wells, in drilling marginal areas, in rehabilitating wells, in putting wells back on production and in retarding the abandonment of producing wells. Your splendid articles in that respect have been appreciated by all who understand the seriousness of the crude oil shortage in this nation and the reason therefor. It does seem to me, however, that it might have been well to have included in the editorial "Action Needed Now" to which I have referred, a statement to the effect that had our government been far sighted enough to have permitted an increase in domestic crude oil prices two years ago when they refused to permit the Phillips Petroleum Company to put an increase in crude oil prices into effect that our reserves of crude oil in the United States and our ability to produce crude oil would be far greater today. I think that it would have been well in the same editorial to have stressed the need and necessity of our government to act in encouraging the finding and development of domestic reserves which could have been accomplished by proper price increases from time to time during the two year period referred to. Chart after chart has been prepared, showing conclusively that historically price has gotten the results. Today the price of Mid-Continent crude oil is only a little over half of what it was during the first World War yet the dollar is only worth half as much as it was during the first World War. The price index for Mid-Continent crude oil is only 58.9 while the price index of the average of all commodities (wholesale) is over 104.

It certainly seems to me that if there is to be any substantial importation of oil that it is going to be necessary that it be accomplished on some basis that will not destroy the domestic petroleum producing industry. Suppose the program advocated by some in 1929 of importing oil and reserving our domestic oil for future use had been put into effect and that the domestic industry had not proceeded to develop and make available the reserves that it did, if that policy had been made effective we would not have had the 20 billion barrels of reserves that we have nor would we have had when the war started the domestic ability to produce that we had and with our tankers taken away from us we would have immediately been confronted with a serious oil shortage.

In connection with all this talk of imports I hope that the importance of the domestic production will not be neglected and that stress will be laid on urging our government to act in a manner that will encourage the finding and developing of the domestic reserves of crude petroleum.

H. B. FELL.
Executive Vice President, Independent Petroleum Association of America.
Ardmore, Oklahoma.

The editorial to which Mr. Fell refers dealt with the need of a foreign oil policy. THE OIL WEEKLY has never believed in destroying a domestic institution in order to build up one abroad. It believes that the time is surely coming when the United States will have to import oil to supplement its domestic production, and has on several occasions stated that such importation should not be on the basis of bringing in foreign oil simply because it may be produced cheaply.

We believe that when the time comes for such a necessity, if the oil industry in the United States is operating as a free enterprise, domestic producers will be receiving for their product a price which is fair. We do not believe that the present price is a fair one.—PUBLISHER.

Government Getting Many Direct Gifts

SOMETHING like four and a quarter million dollars in cash and thousands of gifts ranging from German Iron Crosses to a complete railway train have been received by the Treasury as voluntary contributions to the war effort, over and above the taxes paid and the stamps and bonds purchased by the donors, it has been disclosed by the Office of War Information.

These donations—more than 20,000 of them so far—are coming in not only from citizens of the United States and refugees finding haven here but from Latin American countries.

Many of the contributions, OWI said, are substantial and continuous, one of the more outstanding being a check for $416 which comes in each month from an oil company agent in Maracaibo, Venezuela. Many individuals in oil plants and other establishments also send in regularly checks for one day's pay or more, and this method of making a direct contribution to the war also was adopted by an executive of a Hollywood movie company who sent in a check for one day's pay—$575.

War Requires Vast Oil Tanker Fleet

WITH military requirements for oil, exclusive of the Air Force, estimated at 1,000,000 barrels daily, or 1,000,000 tons a week, for the rest of this year, calculations as to the number of ships required to transport that amount to the theatres of war result in astronomical figures.

What percentage of the oil actually moves from this country to foreign bases has never been disclosed, but if the full amount had to be shipped from the East Coast, and the vessels required a turn-around time of 10 weeks, 1000 10,000-ton carriers would be required. This is about five times as many tankers as were employed during peace times in moving oil from the Gulf Coast area to the heavy consuming East Coast region.

Actually, of course, not all of the military requirements of oil goes abroad, and not all of what does go abroad starts from the East Coast, but the estimate gives an idea of the tonnage that may be required to meet the oil requirements of the armed services in all sections of the world when all campaigns get under full steam.

The vast requirements of the Air Force, which are not included in these figures, also must be moved by tanker to flying fields all over the world.

Too Much Geological Data Gathering Dust in Public Files

Because many final structure maps are amazingly similar to those in publicly-supported geological files that have not been published for lack of a single clinching detail, this open letter suggests quicker dissemination of data in files of government and university geologists could speed up the discovery of many fields, if scientists would forget traditional reluctance to real their work and beliefs before able to establish them beyond all question.

By DON L. CARROLL, Staff Writer

IN VIEW of the urgent need for discovering larger quantities of petroleum in the United States, it seems in order to suggest that research geologists, particularly those employed by the various state geological surveys, state universities and the federal government, be made more aware of the great contributions that they could make toward a solution of the problem of dwindling supplies of the life-blood of war. There are scores of such scientists, well trained and with years of experience in fundamental and applied geological research, whose intimate knowledge of the geology of local areas could be contributed to the cause with unquestioned effect.

Because they are scientists, these men and women are traditionally reluctant to reveal what they believe until the whole truth can be established beyond question. That attitude represents the correct scientific spirit; but these are days of emergency—days that demand liberalization of ideals for the duration. Most of these research geologists, engaged in academic or semi-academic work, prefer to remain out of print rather than hazard even reasonably accurate guesses regarding stratigraphic and structural conditions in areas to which they have devoted their attention. Thus, for lack of a single clinching outcrop, as it were, or the absence of one more hole that would supply the final subsurface data for drawing a detailed structure map, any number of potential oil fields may remain undiscovered many additional years.

More often than seems possible, the final structure maps of developed fields are found to be amazingly similar to maps in the files of our publicly-supported research geologists—maps that in many cases have been gathering dust for years, for one scientific reason or another, or which were not printed because of lack of publication funds. These maps, whether completed or not, and whether or not they be supplemented by manuscript discussions, must be considered public property and, therefore, for the emergency period at least, they should be made more generally available for professional scrutiny for the benefit of the oil industry and the nation.

This is not an argument in favor of the release of confidential data solicited and secured from competing firms; nor is it suggested that map and manuscript files be opened on a first-come-first-served basis. Obviously, fairness demands that any such waiving of established policy be done on such a basis that all interested parties have an equal chance to examine and evaluate the material at the same time. There are many ways in which the details of such an arrangement could be worked out to the satisfaction of all concerned.

The aim of the research geologist is to put out a report that will prove to be correct and authoritative after test drilling has been done, in spite of the fact that the odds are against such expectations. It should be pointed out, further, that the oil companies are well aware of the risks involved in exploratory drilling, and that even after state and federal reports are found to check with those made by their own geologists, and with geophysical results, the companies still regard a wildcat well as a gamble.

In view of the latter fact, a plea is hereby made that public geological research organizations make every effort to publish at the earliest possible date, whatever data and recommendations they may be able to gather together or formulate that will serve as guides or direct aids to the oil industry in its search for more producing fields. They could be published as "war-emergency preliminary bulletins." If they are reliable and represent real contributions to knowledge, the oil companies will be most grateful and will ask for nothing more. All they want is a suggestion as where to do more intensive work of their own in promising areas that might not have received their attention previously.

Difficulties can be foreseen, of course, with regard to rushing preliminary reports or bulletins into print. The most obvious bottleneck is that of assignment of funds adequate for the purpose. This is a matter of local initiative required to secure necessary legislative support. The oil companies and trade journals, as well as newspapers and chambers of commerce, by united effort, could very likely take care of that particular situation.

With respect to the release of unpublished material in files, as first suggested, a number of difficulties come to mind, involving the temperaments of the scientists involved. This, too, is a problem in the art of persuasion, that, when attacked with the argument of patriotic cooperation, can be resolved to a considerable degree.

To be emphatic, not enough oil is being discovered; the oil companies that are expected to find more oil are entitled to all the help that is available toward accomplishing their prodigious task; much help is available in the form of concrete knowledge, logical belief, completed and uncompleted maps and manuscripts, in the heads and files of public geological research organizations and personnel. That potential help should be mobilized without further delay and without too much regard for scientific tradition or the local policies that may be entirely reasonable under normal, peacetime conditions.

Combined Gas-Water Injection Extends Life of Lenticular Sand

Pressure maintenance program in Plymouth field is good planning, engineering and conservation

SAND lenses, completely incased by impervious formations, usually have no lasting drive, either water or gas, to carry production from initial pay to an economical depletion. Unless artificial, or secondary methods are employed, the sand will yield a very low percentage recovery; however, these sands have one peculiar advantage in that they are ideally suited for the application of artificially induced gas or water drives. This is true of the Plymouth sand in the Plymouth field of San Patricio County.

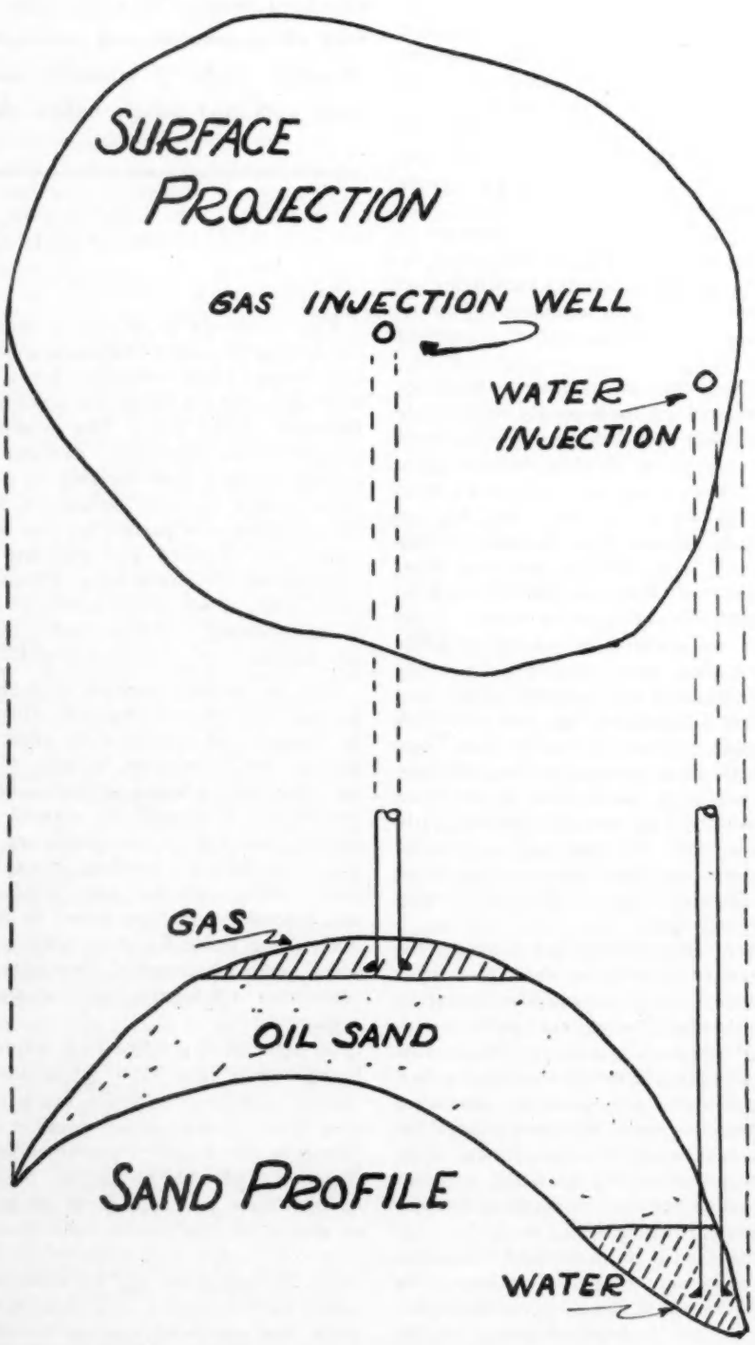
The Plymouth field produces from five sands, the uppermost of which is lenticular, the discovery sand drilled by Plymouth Oil Company. Feathering out on the edges, this sand covers only 360 acres and does not extend over the whole field area. Many wells do not pierce its reservoir. It is completely bottled within impervious structures and therefore most suitable to injection methods of pressure maintenance for secondary recovery.

With good foresight, the operator here was one of the first to introduce secondary-recovery methods to a sand before the expiration of its natural energy. This foresight has returned dividends. Projection of the initial production curve indicates that the sand would have been completely dead by the middle of 1940; its productive period has been extended at least 12 years, its estimated recovery per acre increased 300 percent.

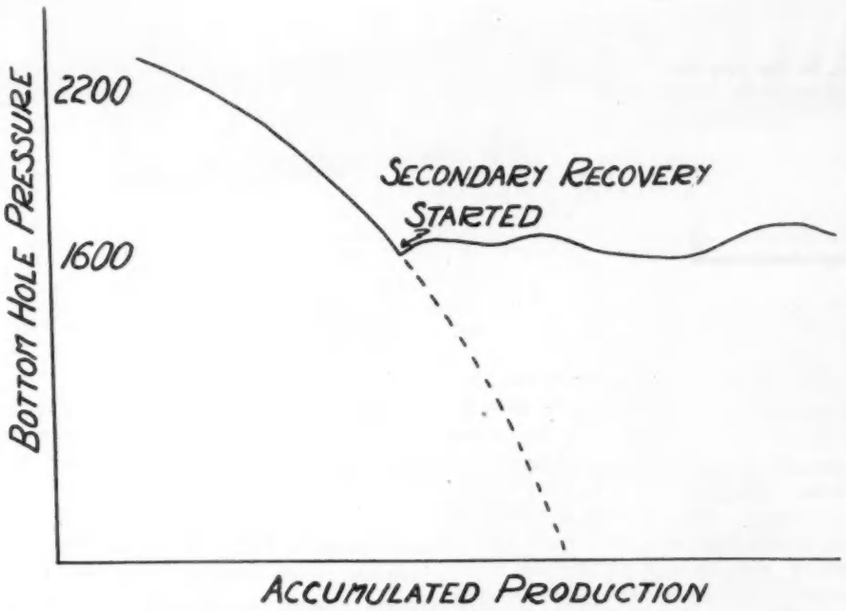
Secondary Recovery Method

The principle is simple; the operation is more intricate. Gas is injected into the crest of the lens through a well approximately in the center of the field. Water is forced into the sand through a well located on the edge. Thus gas is introduced at the top, water at the bottom. The oil is forced down by the injected gas creating an expanding gas cap. The water washes the lower sand clean while driving the oil upward to the producing wells. Thus perfect control of the bottom-hole pressure and fluid production is attained.

The water-injection system serves the double purpose of disposing of the water produced from the other sands in the field as well as providing the means of carrying on the secondary-recovery program. The system includes means



Location of points of gas and water injection into a lenticular sand. Both the horizontal projection and vertical profile of a typical sand lens are shown.

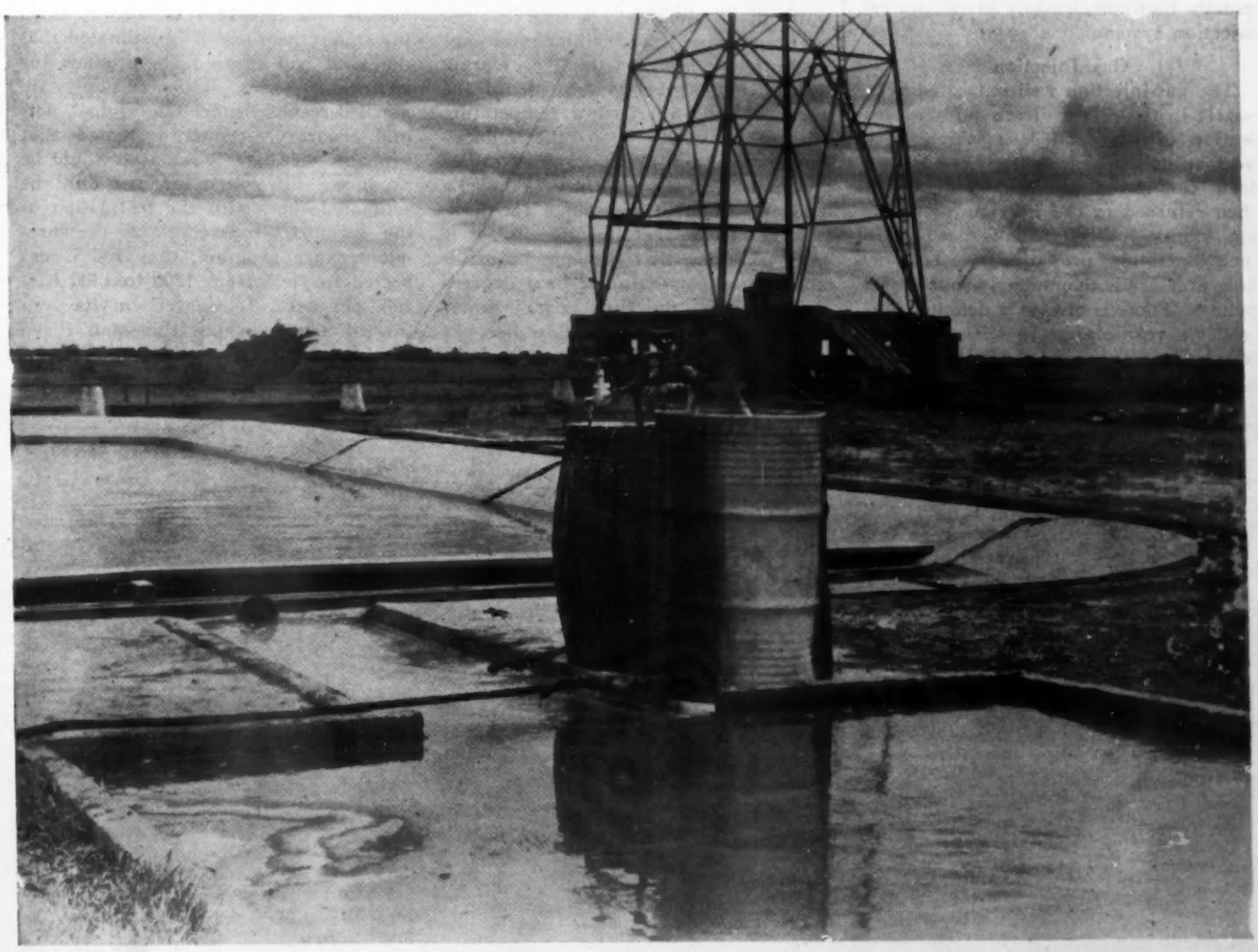


Typical bottom hole pressure vs. accumulated production curve for a lenticular sand pay. Unless secondary recovery methods are instituted, the curve will fall off in an exact parabola. Point at which symmetry of curve is broken is that at which pressure maintenance was started.

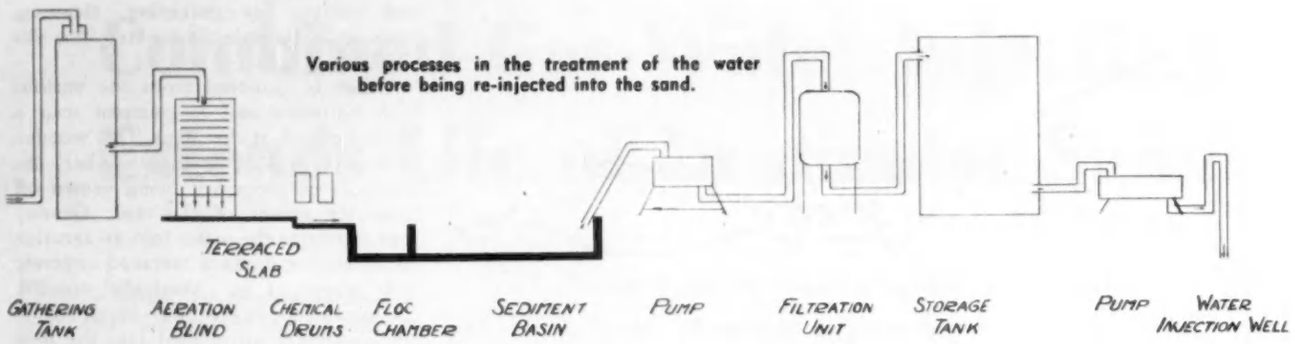
and devices for gathering, cleaning, treating and reinjecting water into the sand.

Water is gathered from the various tank batteries and is pumped into a receiving tank at the plant. This wooden tank acts as a sediment chamber, the water to be processed being drawn off from the center of the tank. Gravity then conducts the water into an aeration blind, thence down a terraced concrete slab where it is chemically treated. Chemicals to cause floc precipitation are constantly introduced into the flow stream from dispensing drums. After chemical treatment, the product empties from the concrete slab into a partitioned section of the main settling basin. Here the greater part of the solids settle out; the remainder dropping out as the water traverses the length of the settling portion of the basin. At the other end, a pump picks up the purified water, transports it through a filter and into a stock tank.

Injection of the water into the formation requires, besides the hydrostatic weight of the fluid column, a pump



In the foreground of this photograph may be seen the terraced concrete flow channels into which the chemicals are added from the drums. The settling basin, in which the floc is precipitated out, is also shown. The water injection well is in the background.



Various processes in the treatment of the water before being re-injected into the sand.

pressure of 900 pounds. This high pressure was responsible for many operating difficulties, among them being the fact that excessive pump-end breaks have been experienced. This particular difficulty has been solved by the use of forged-steel pump ends. Also aiding in reducing pump failures is the installation of a pulsation chamber on the outlet side of the pump. This chamber, made of a short section of 8-inch pipe sealed at the top and connected vertically to the outlet, with a connection to permit its being charged with gas pressure, dissipates much of the unusually high shock loads in the water-injection system.

Gas Injection

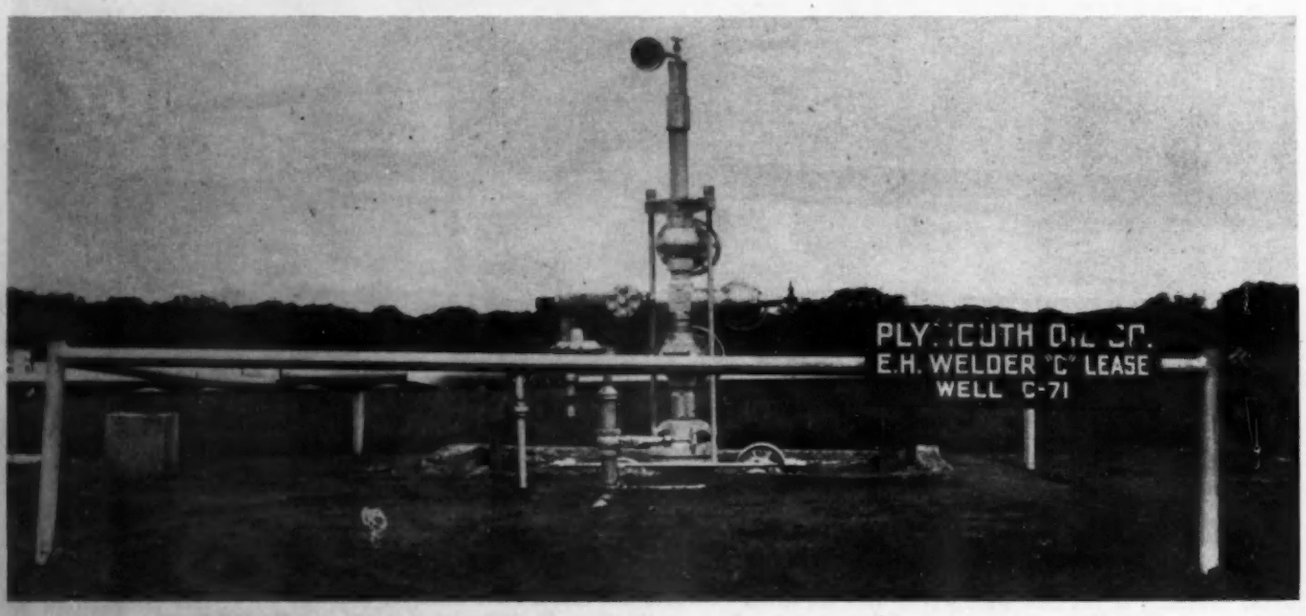
The gas-injection well is located very nearly in the center of the surface projection of the sand lens which it is pressuring. The injected gas is received from the lower sand, repressured and then returned to the Plymouth sand at approximately 1700 pounds per square inch operating pressure; the bottom-hole pressure is maintained around 1600 pounds. There is always a definite, controllable relationship between the bottom-hole pressure and the injection rate of the gas.

One of the unusual parts of the gas-injection system is the simple, effective heater in the line to prevent the formation of line-plugging hydrates. This heater is composed of a 40-foot, 10-inch pipe jacket welded around a section of the 2-inch gas flow line near the injection well. It is a circulating water medium, heat exchanger, receiving heat from an ordinary kitchen type water heater. The heating unit proper is connected to an open-ended steel drum, which normally is filled with water, thus providing expansion room for the system as well as assuring a surplus of water at all times.

The gas upon leaving the compressor has a temperature of 180° F. During the flow from the compressor to the injection well, there is a temperature drop of about 90° F. At this reduced temperature, and under the pressure of injection, hydrates of the gas have a tendency to form and block the flow. In order to prevent this freezing, it is only necessary that the line be maintained at a temperature 2 or 3 degrees greater. This, the little water heater does very well. After the flow line has gained some heat from the gas, it is not necessary that the heater be used.

Results

The combined pressure-maintenance and water-flooding operations on the Plymouth sand have been in effect 20 months; too short a time, says the operator, to determine whether results are good or bad. During that period, 120,000 barrels of water have been disposed; that's one good result. On paper (by projection of the initial production curves) the sand should have been dead at the original rate of production by the half-way mark of the year 1940. It's still going strong, with a maintained bottom-hole pressure of 1600 pounds per square inch and it is estimated that the sand will continue to produce for another 10 years. Those certainly are not bad results. Under the original, natural recovery, it was estimated that probably 400 barrels per acre would be produced. Of course, it can only be estimated—but, with the instigation of the secondary-recovery and pressure-maintenance program, the sand is expected to yield from 1200 to 1400 barrels per acre. It is well on its way toward accomplishing this—and that's good planning, good engineering and good conservation.



Gas-injection well

OIL IS AMMUNITION

FOR BETTER LIVING CONDITIONS

The oil industry takes an important part in safeguarding the health and comfort of the nation's fighting men, especially in providing them with better living conditions.

No longer do soldiers drill on fields covered with dust or mud. Dust-laying oils are used on many parade grounds. To keep out wind and rain, tents and other cotton duck products used by armed forces are made waterproof, flame resistant, and mildewproof by means of petroleum products. These goods include truck tarpaulins, leggings, canteen bags, hammocks, barrack bags, stretchers, folding cots and numerous other items. Tar-impregnated building and roofing papers are used extensively in construction of Army barracks.

Oil also provides insecticides to control mosquitoes, flies and other pests, and thereby prevents epidemics that might kill more men than enemy bullets. Salves and light mineral oils of many kinds aid in speeding recovery of the wounded and the sick. Lotions for burns and exposure, made from petroleum, help to relieve the tortures of men forced on the open seas in lifeboats through the sinking of vessels by the enemy.

These, together with ingredients of soap and toilet preparations, are contributions of oil toward a healthier, cleaner, and more comfortable army life.

Oceans of Oil Needed
YOUR JOB IS VITAL FOR VICTORY

Photograph taken in late 1935, showing workmen laying oil pipe line across Orel River during last stage of construction on 800-mile line from Caspian Sea to Orsk. The line extends from Guriev on the Caspian Sea to Orsk. The line embraces 11 pumping stations.
—Wide World Photo

New Russian Oil Fields of Ural-Volga Area Highly Promising

By JOHN SCOTT

THE region between the Volga and the Urals has been estimated to have 2,700,000,000 tons (about 19,413,000,000 barrels) of petroleum reserves, or 32 percent of the total reserves of the Soviet Union, which Russian authorities say amount to approximately 56.1 percent of the oil reserves of the world.* Thus the second Baku region, as the Ural-Volga district is called by Soviet oil men, is among the richest single oil-bearing areas in the world. However, respite its estimated potential ability, production of oil in the region is still in its infancy, as shown by Table 1.

Volga oil was discovered originally in 1768. For 150 years it was studied by old Russian geologists, and in 1887 a serious study on the subject was published by Geologist-Academician, A. P. Pavlov. No oil, however, was produced. After the Revolution, in line with their policy of utilizing previously untouched natural resources of their country, the Bolsheviks set out to investigate further and to commence the commercial extraction of Ural-Volga oil. Beginning in 1928, numerous geological expeditions set out to investigate the possibility of the commercial production of oil in the region. In 1929 in the Perm district (Chusovsky Gorodok) an 886-foot well, intended to produce potassium salts, began to produce oil. This was the first Ural petroleum to be used industrially. In 1931 deep wells were drilled in the Ishimbaevo region, and in May, 1932, the first gushers began producing. At about the same time oil was discovered at two places on the western slopes of the Urals, about 300 miles apart. Oil production then started in earnest, and in 1934, 360,000 barrels were produced. In that year a new field was discovered in the Ishimbaevo region and oil was found in the district of Syzran. Paper mill maintenance men drilling for water in Krasnakamsk struck oil in 1935, and in 1936 the first significant oil fields in that district were already being exploited. In 1937 oil was discovered in Tuizmaz, and oil production began at Buguruslan in the Chkalov district. In 1938 oil was discovered in three new places—in Severokamsk and Polazna in the Perm district, and in a new Ishimbaevo field. By 1939, 12 industrially significant fields had been found and seven active fields were being worked in the district between the Volga and the Urals, while two oil-processing plants had been constructed and were in operation (Ishimbaevo and Ufa) and a railroad and a six-inch pipe line had been constructed between them. By 1939 the new oil bearing regions had produced 28,760,000 barrels of oil, and prospects seemed brilliant.

TABLE 1
Ural-Volga Oil Production

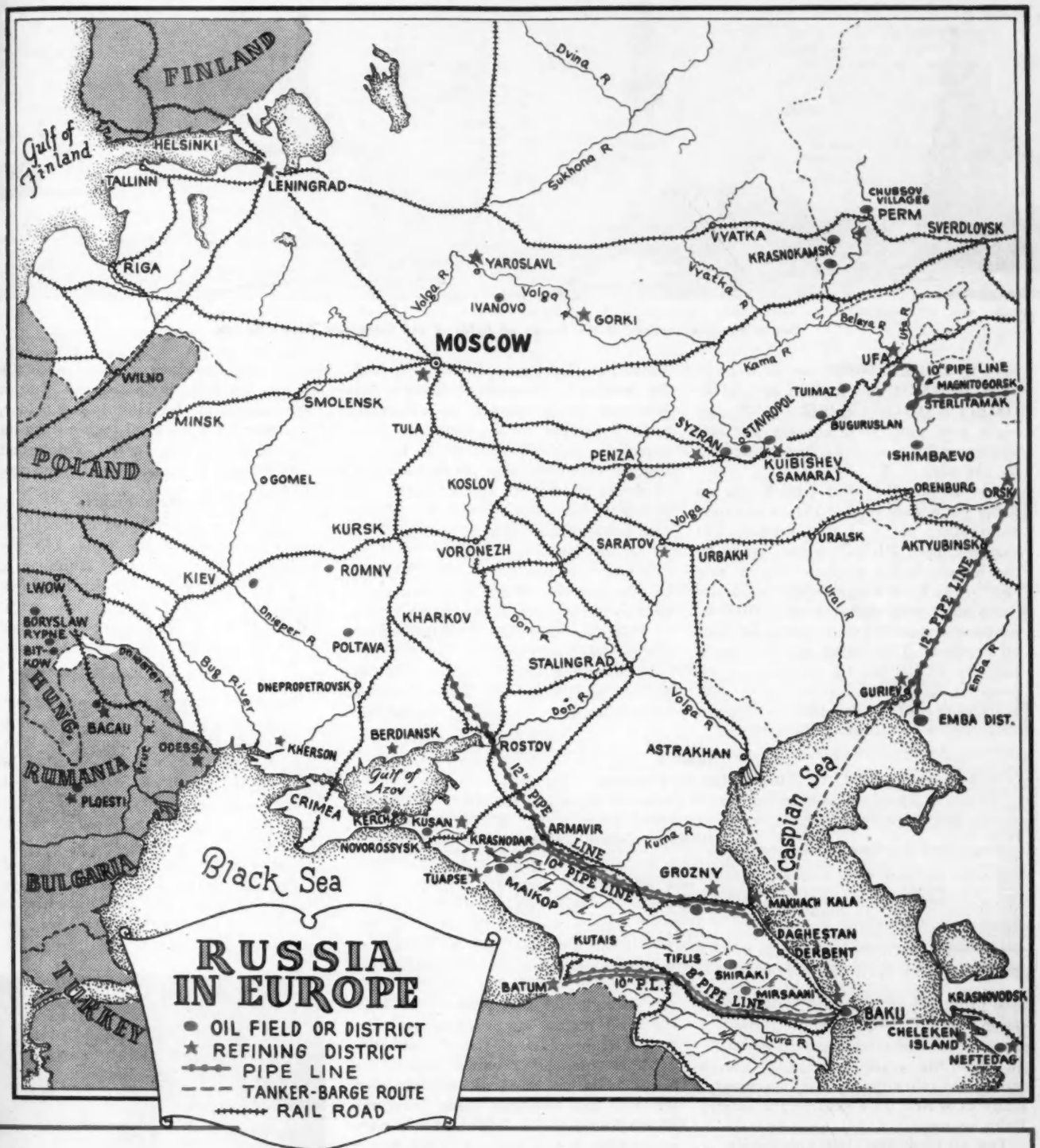
YEAR	Tons	Barrels (1 Ton—7.19 Bbls.)
1929	600	4,300
1933	36,300	260,900
1938	1,298,400	9,335,400
1939	2,004,000	14,408,700
1940	2,000,000	14,380,000
1941	2,226,000	16,004,900

The Third Five-Year Plan had provided for an oil production of 50,000,000 barrels in the Ural-Volga region in 1942. As the foregoing table shows, production was nowhere near that point. Actually a great deal was accomplished in the late thirties, but not nearly so much as was provided by plan. In order to keep up with the ambitious production scheme, it would have been neces-

* Editor's Note: See accompanying comment on difference between Russian and U. S. methods of estimating reserves.

JOHN SCOTT wrote the accompanying article for The OIL WEEKLY on assignment. He has traveled extensively in Russia, and is the author of an illustrated article on Russia in a recent issue of *The National Geographic* that attracted a great deal of interest.

The figures on the relationship of Russian reserves to world reserves given by Mr. Scott are, of course, from Russian sources. The Russian method of figuring total reserves varies from the American method in that the latter figures reserves on production actually proven by wells drilled, while Russian authorities take in consideration the possibilities of geological conditions that are favor-



able to production, but where wells have not as yet proven the reserves in accordance with American ideas.

During the 17th International Geological Congress, held at Moscow in 1937, Dr. Ivan B. Goubkin, president of the Congress, presented a paper on reserves which divided them into six categories. The sum of all catagories was 50 billion barrels on the Russian basis. However, considering reserves on the basis of American methods of calculating reserves (oil actually proven by wells already drilled), American geologists present at the meeting, among them William Wrather, then a consulting geologist and now head of the United States Geological Survey, and J. Elmer Thomas, then a consulting geologist, later an official of PAW, and now an independent operator, Russian reserves would amount to about 7½ billion barrels. But both gentlemen say that it is not at all improbable that, with immense areas considered favorable for exploration, Russian reserves may ultimately run higher than the 50 billion estimated by Dr. Goubkin.

Unquestionably, Russian proven reserves have grown since 1937, and today the estimates of private American sources (including neither of the gentlemen referred to above) place actually proven reserves at 8½ billion barrels, which is far less than 56 percent of the world's total when calculated by the American method. It is only fair to say, however, that the Russians have been carrying on heavy development in new areas during the past few years, and that any American estimate of proven reserves may fall short. Total world proven reserve estimates run from a figure of 42 billion made about two years ago to the figure of 56 billion barrels named in "Fightin' Oil," the new book written by PAW Administrator Harold L. Ickes.

One of the new sections of the Syzran oil fields of the Syzranneft Trust.—Sovfoto

sary to drill 230,000,000 feet of wells in 1938, 348,000,000 feet in 1939, and 1,148,000 to 1,475,000 feet in 1942. In 1939 only eight new wells were actually put into operation, instead of the 25 provided for by the plan.

As late as 1938 the Ural-Volga oil fields got a good deal of their equipment from other parts of the country. For example, the "PRN-2" pump, made by the Krasny-Molot plant in Grozny, was sent to the Ural-Volga region, while the same plant was undertaking in 1939 to produce a new NPN-10 pump for hot oil products. This pump was to have a capacity of 750 barrels per hour of oil products with temperatures up to 250° centigrade (482° Fahrenheit). This plant also produced an improved type of mud pump, the NC-2-400, operating under a pressure of 1750 pounds per square inch. In 1939 the plant was producing a number of other types of oil machinery, many of which were sent to the second Baku region.

The oil from the Ural-Volga wells is extremely rich in benzene and also has high sulphur content. The oil from the second Baku region in general contains from 2 to 3 percent sulphur. This makes it possible to produce sulphur as a by-product. On the other hand, the presence of the sulphur complicates the refining of the petroleum to a large extent, making it necessary for the refineries to be equipped with apparatus which resists corrosion and also, in some cases, with special de-sulphurizing units to extract the sulphur from the oil products received.

The benzene content of the Ural-Volga petroleum is extraordinarily high. Its maximum content of benzene has been put at 25 percent, as contrasted with 5 percent to 6 percent in Baku petroleum and 10 percent in Grozny. *Pravda* estimates that Ishimbaevo oil produces up to 50 percent light fuel products, and that it contains 37 percent benzene and Krasnakamsk oil 47 to 50 percent benzene.

While the Urals exported 5,750,000 barrels of crude oil and petroleum products to other parts of the Soviet Union, in 1938 they imported 3,128,000 barrels (from the Volga region 2,157,000 barrels, from the north Caucasus 827,000 barrels and from the Trans-Caucasus 144,000 barrels). Exporting 935,000 barrels of light oil fuel products in 1938, the Ural region in the same year imported from other districts a quantity of light fuel oil products nearly six times as large. Most of this imported gasoline and kerosene came from the North Caucasus. In 1938 the Urals were responsible for 12 percent of all Soviet petroleum products consumption.

Thus in 1938 the Ural region was not self-sufficient in terms of petroleum products. It could not even lubricate and fuel its own industrial equipment and its own tractors and motor transport, let alone support military or other extraordinary oil consuming units. The completion of the Ishimbaevo and the Ufa refineries in 1939 and 1940 and the possible construction in 1941 and 1942 of other refineries in Bugaruslan, Kamensk and elsewhere, coupled with the drastic increase in petroleum output (particularly in the Ishimbaevo fields), may have freed the Ural region from its dependence on the central Volga and north Caucasus oil fields and refineries.

TABLE 2

Ural-Volga Oil Production

(In thousands of barrels, on basis of 7.19 barrels per ton)

YEAR	Bashkiria	Tuimaz	Kamansk	Buguruslan	Total
1931	.....	.....	44.5	.....	45.3
1932	33.9	.....	46.0	.....	76.2
1933	157.4	.....	103.5	.....	260.9
1934	450.1	.....	87.7	.....	537.8
1935	2,903.3	.....	57.5	.....	2,975.2
1936	6,962.8	.....	65.4	.....	7,028.2
1937	7,022.4	35.2	170.4	1.0	7,588.3
1938	8,267.8	149.5	433.5	16.5	8,867.4

Four Main Fields

Most of the oil produced in the Urals comes from four main fields: (1) the Bashkirian fields around Ishimbaevo, (2) the Tuimaz fields, (3) the Kamensk fields and (4) the Buguruslan fields. Table 2 indicates the relative importance of the various fields in Ural production.

Ishimbaevo

The town of Ishimbaevo grew from a sleepy village in 1932 to a booming oil city of 35,000 inhabitants in 1940. The oil field here, which is located 18 miles to the south of Sterlitamak and 85 from Ufa, is the largest field so far discovered in the Ural-Volga region. It is an oil-bearing limestone deposit. The area of the various fields does not exceed 500 acres, but very extensive deposits of petroleum are concentrated at depths of from 1000 to 2950 feet. In some cases the thickness of the stratum

Well in the Sevro-Kamsk field of U.S.S.R. Permian Basin cleaning itself during completion.

of oil-bearing limestone attains 500 feet. The wells yield 1800 and more barrels of petroleum daily. Six fields are already working, and in 1939, production was 11,500,000 to 11,860,000 barrels. The 1942 plan was 40,000,000 barrels.

The pay formation of the Ishimbaevo oil pool averages 165 to 975 feet in thickness, and the proved area covers 1730 hectares, according to American oil engineer L. David Wosk (series of 7 articles published in THE OIL WEEKLY between February 21 and May 2, 1938). Oil is found at depths of from 2300 to 3125 feet. Approximately 150 wells were in operation in 1938, of which 40 percent were flowing, 30 percent used air lift and 30 percent were pumping. The field showed no evidence of producing any water. The gas-oil ratio was about 530 cubic feet of gas per barrel of oil. It was claimed that no dry wells had been drilled since 1937. The casing head pressures were about 125 pounds per square inch, and no bottom hole pressures were being taken. The shut-in pressure of this field when discovered was 1100 pounds, and the present pressure is 660 pounds, showing a loss of 440 pounds during the life of the pool. The output of the pools was 21,600 barrels a day from 150 wells.

Tuimaz

The Tuimaz petroleum deposit, one of the largest in the Ural district in both area and oil reserves, is also in Bashkiria. The oil is from 3450 to 3775 feet deep and the field covers an area of more than 5000 acres. Two oil-bearing strata have been discovered. The upper is about 33 feet in thickness and yields 35 to 350 barrels per well per day. The second stratum is 33 to 50 feet deeper than the first and was not discovered until 1939. It yields 20 to 45 barrels daily per well. Petroleum of 26.5 degrees API gravity, benzene content of 20 percent and a kerosene content of 19 to 20 percent is produced.

Second producing well completed at Samara Bend (Syzran) field flowing into the pits.

The topography of Russia's Permian Basin is similar to the Permian Basin of West Texas, U.S.A. Here is Mt. Tratao, northeast of Ishembaevo, which rises approximately 750 feet above surrounding area.

Perm

In the Perm district four oil fields are being exploited: Chusovsky Gorodok (now practically exhausted), Krasnokamsk (which produced 400,000 barrels of oil in 1938, fulfilling its plan for that year by only 92.2 percent) and Severokamsk and Polazna. The last two, in a northeastern extension of the Krasnokamsk oil bearing strata, were opened in 1938. The three taken together cover an area 35 miles long and form an oil bearing region with tremendous possibilities.

Buguruslan

The Buguruslan oil field was discovered in 1937 and began production in 1939. It covers an area of nearly 4000 acres near the city of Buguruslan. Gas and oil lie in a sand deposit 1000 feet deep. Production runs from 40 to 70 barrels per well per day. The greatest possibilities in this field lie in the as yet unprospected strata, which showed such great oil producing possibilities in the Samarski Luki field but which in 1939 had not yet been reached in Buguruslan.

Stavropol

The Stavropol oil field, 35 miles northeast of Syzran, is very similar to the Syzran field. In 1937 a gusher was struck here which produced 575 to 950 barrels a day.

Production from the Stavropol and Syzran fields combined was 544,000 barrels in 1938. The oil had a specific gravity of 0.891 and contained 45 percent light products, of which 30 percent was benzene.

The field at Samarski Luki is similar to those at Syzran and Stavropol and was in 1939 already assuming considerable industrial importance. In the same general district around Syzran lie four other oil fields—Troekurovo-Kubinskaya, and three which are being prospected—the Usol, the Zolnovo-Ovraga and the Sheremetev structures.

Syzran

The Syzran oil field is 4 miles northeast of the city of Syzran and covers an area of 5000 acres. In 1934 oil was discovered at Level "A" between 1650 and 2000 feet deep. From this level the average daily production per well was not more than 7 barrels. In 1936 a new level, "B," was found at from 3250 to 3400 feet. By 1939 Level "B" had become the principal source of oil production. It gave an average daily output per well of 275 to 425 barrels, and in certain cases in the early days of production, 850 to 1100 barrels.

The Soviet government is aware of the absolute necessity for improving production methods in the Ural-Volga oil fields. It has been estimated that the use of gas pressure to bring the oil out of the wells would increase production by 80 percent. Actual achievements have fallen short of plan production. However, there has in all probability been an increase in production due to the war. *Isvestia* for January 15, 1942, writes: "Oil production from the Buguruslan field has more than doubled since June 22, 1941." The Soviet Embassy Bulletin for October 28, 1941, asserts that petroleum production has increased by thousands of barrels over pre-war production.

In the postwar period, however, the Ural-Volga oil fields will become tremendously important. With the introduction of sufficient quantities of up-to-date drilling equipment and systematic exploitation, the Second Baku region should be producing 180,000,000 barrels of petroleum annually (500,000 daily) within five years. Taken together with the extensive oil reserves in the Nebit-Dag region on the east coast of the Caspian Sea, and the Emba fields to the northeast of that body of water, it assures the Soviet oil industry a bright future.

Excessive Polished-Rod Loads Unnecessary

Operation of properly selected equipment at correct speeds will reduce polished rod loads to minimum magnitudes

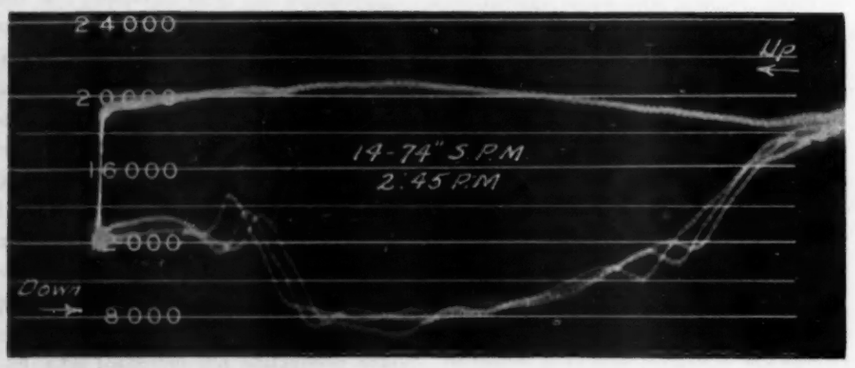
By FRANK BRIGGS, Staff Writer

EXCESSIVE polished-rod loads on pumping wells have too long been accepted as a necessary evil. Polished-rod loads can be reduced through experiment and comprehension of the problems involved. There are speeds of operation, adequate for desired production, that cause excessive maximum loads while a slightly higher or lower speed may result in a reduction of load. This is a simple method and it often is most satisfactory. Elimination of shocks, acceleration load and stress waves through design of equipment also are effective in the reduction of peak polished-rod loads.

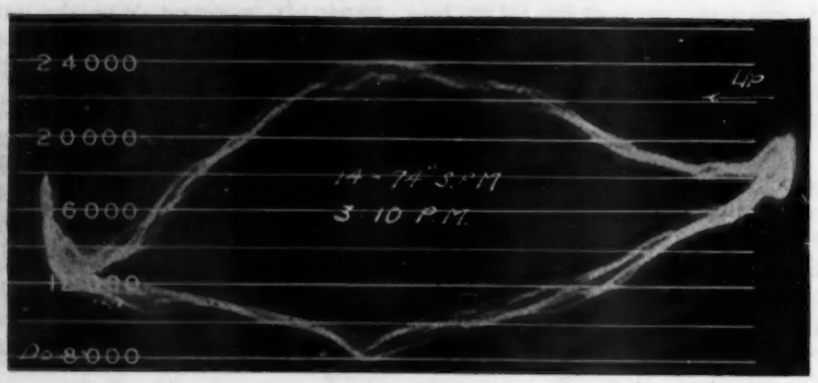
To the pumper, the load on the polished rod is something that causes the sucker rods to break. The engineer knows this load to be result of a combination of four factors: weight, friction, acceleration and shock load, and vibration. Weight is a factor composed of the rod mass plus the fluid column supported by the plunger; friction results from the motion of the rods against the tubing, the plunger against the working barrel and the fluid column against the tubing. Shock loads, for this particular case, may be considered the result of fluid pounds, or other abnormal operating difficulties. The constantly recurring acceleration loads, also the result of motion, plus the effect of vibratory stress waves are factors most responsible for the maximum load, as well as the shape of the polished rod load curve. It is these latter factors that can be controlled to a certain extent, thus effecting changes in the load curve.

Newton found out a long time ago, that to start something moving required force; to stop it, force in the opposite direction. Thus with a string of sucker rods, which are constantly starting up, speeding, slowing down, stopping and then starting again in the opposite direction, all in a short time and distance, these forces are very much in evidence. These are the forces of acceleration, adding or subtracting from the total polished-rod load, depending on the direction of motion of the rods.

With such forces present, the shape of the load curve is dependent upon speed of operation; with them eliminated, the load curve would be rectangular. Consider then the load curve on a pumping unit that has a slow constant speed of the plunger on the upstroke. No acceleration is present, so the complete upstroke load remains constant—a straight line on the load curve. The same would be true for the downstroke. The load increase and decrease on the curve ends represent merely the picking up and lowering of the fluid load. Thus on deep wells that necessarily must operate with heavy loads, many operators have found that slow, long-stroke pumping units, with an upstroke speed as nearly constant as is possible to obtain, have less maximum load due to elimination of the acceleration forces.

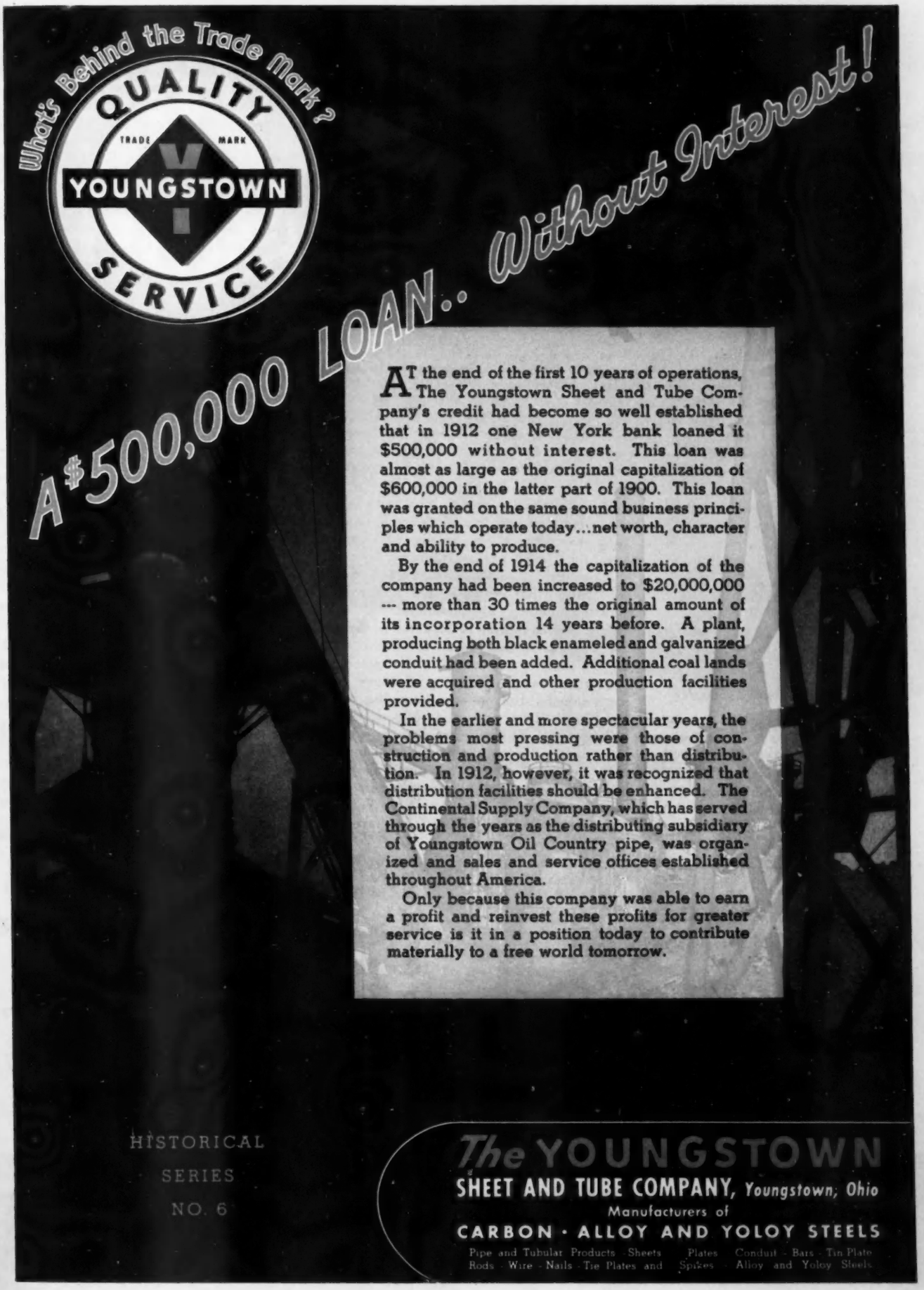


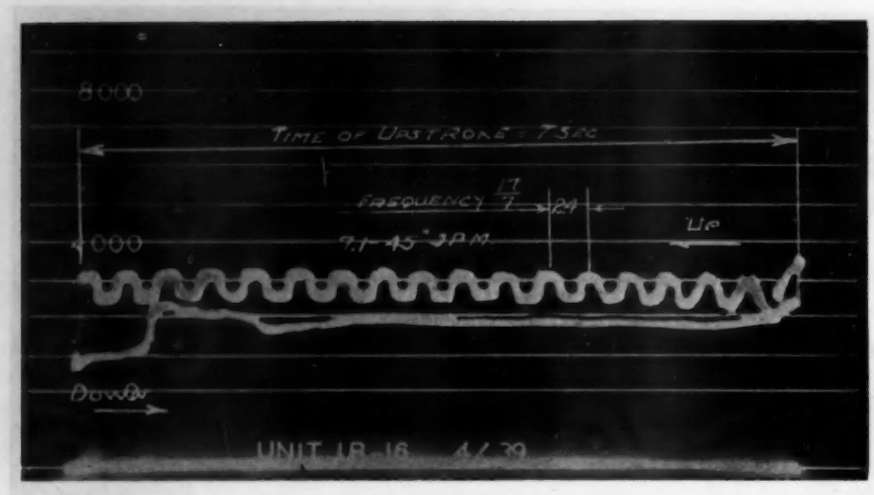
The polished-rod load curves as obtained by a dynamometer on a unit with free horsehead and later with this horsehead rigid. The upper card shows the almost straight line of the load on the upstroke resulting from elimination of much of the forces of shock, acceleration, and stress waves by the free motion of the head. The lower card is typical of loads with acceleration and stress waves. Note the reduced load in the first card. Both were taken on the same well, at the same speed and on the same unit.



Dynamometer load curves obtained on wells pumping with these units show this characteristic straight-line load on the upstroke. In order to illustrate the effect of acceleration on load, two load curves were obtained on the same well operating at the same speed but with the horsehead providing "free" motion to the rods in one case and simple harmonic, or "tied," motion in the other. By eliminating the forces of acceleration, the maximum load was decreased approximately 3000 pounds.

The sucker-rod string vibrates when disturbed from its position of rest. This vibration then occurs with a certain frequency peculiar to that material. This natural frequency is automatically as-


What's Behind the Trade Mark?
QUALITY
TRADE MARK
YOUNGSTOWN
SERVICE
A $500,000 LOAN.. Without Interest!
AT the end of the first 10 years of operations, The Youngstown Sheet and Tube Company's credit had become so well established that in 1912 one New York bank loaned it $500,000 without interest. This loan was almost as large as the original capitalization of $600,000 in the latter part of 1900. This loan was granted on the same sound business principles which operate today...net worth, character and ability to produce.
By the end of 1914 the capitalization of the company had been increased to $20,000,000 --- more than 30 times the original amount of its incorporation 14 years before. A plant, producing both black enameled and galvanized conduit had been added. Additional coal lands were acquired and other production facilities provided.
In the earlier and more spectacular years, the problems most pressing were those of construction and production rather than distribution. In 1912, however, it was recognized that distribution facilities should be enhanced. The Continental Supply Company, which has served through the years as the distributing subsidiary of Youngstown Oil Country pipe, was organized and sales and service offices established throughout America.
Only because this company was able to earn a profit and reinvest these profits for greater service is it in a position today to contribute materially to a free world tomorrow.
HISTORICAL
SERIES
NO. 6
The YOUNGSTOWN
SHEET AND TUBE COMPANY, Youngstown, Ohio
Manufacturers of
CARBON · ALLOY AND YOLOY STEELS
Pipe and Tubular Products - Sheets - Plates - Conduit - Bars - Tin Plate
Rods - Wire - Nails - Tie Plates and Spikes - Alloy and Yoloy Steels



Dynamometer card illustrating the existence of natural stress waves. The sucker rods are set to vibrating by the pumping motion, which results in a stress wave frequency that is dependent upon the length of the string. This card was obtained on a slow speed, light unit. The calculated frequency checks with the frequency as shown by the sinusoidal load curve.

sumed because of the mass (weight) and the elastic properties inherent in that material. If the two factors of mass and elasticity remain the same, the vibration period will not change. Thus the sucker-rod string vibrates with the same natural frequency as long as the mechanical operating conditions remain unchanged.

Should it be desired to determine the natural frequency of vibration of a rod string, Slonneger has shown that this can be done by the use of the simple formula:

$$\text{Freqency} = 237{,}000/D$$

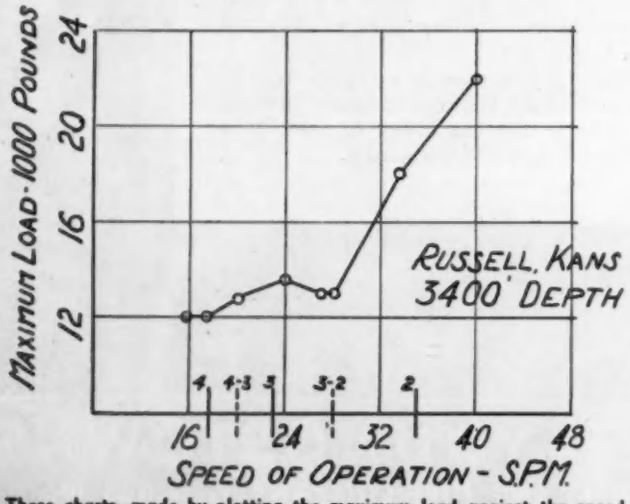
where D is the length of the rod string. Supporting evidence for the existence of these natural stress waves or vibrations in a rod string may be found in the dynamometer card shown. This load curve was obtained on a light well pumped with a radical type unit that had a very slow upstroke speed. The sinusoidal waves that represent the natural vibrations of the rods may be seen in the upstroke portion of the curve. This phenomenon is rare, as the usual pumping unit has loads and speeds such that these waves are damped out from the load curve. The frequency, as actually counted from this card, agrees very well with that calculated by the above formula.

When motion is imparted to the pump by the surface beam, the above natural vibrations are set up in the system. But there is also another vibratory effect: namely, that of the pumping motion itself. This motion is reciprocating, repetitive and therefore of a vibratory nature that can be represented by a sine curve. Thus in the pumping system there are two vibratory stress waves induced by the motion of the beam.

If these two vibrations have equal or exact multiple frequencies, they add to each other and the resultant wave at the polished rod is a combination of both magnitudes. Thus together, or in phase, the load at the polished rod is increased. If the two stress waves have unequal frequencies (or unequal multiples thereof), their magnitude subtract from each other and the resultant load at the polished rod is less than the magnitude of either.

As the natural frequency of the rods remains the same for a certain depth, the only variable bringing the pumping motion in or out of phase is speed of operation. Slonneger has devised a chart, with curves plotting depths vs. speed, showing when these waves are synchronous (in phase) and non-synchronous (out of phase). Lowest maximum loads are obtained when operating the well on a non-synchronous speed.

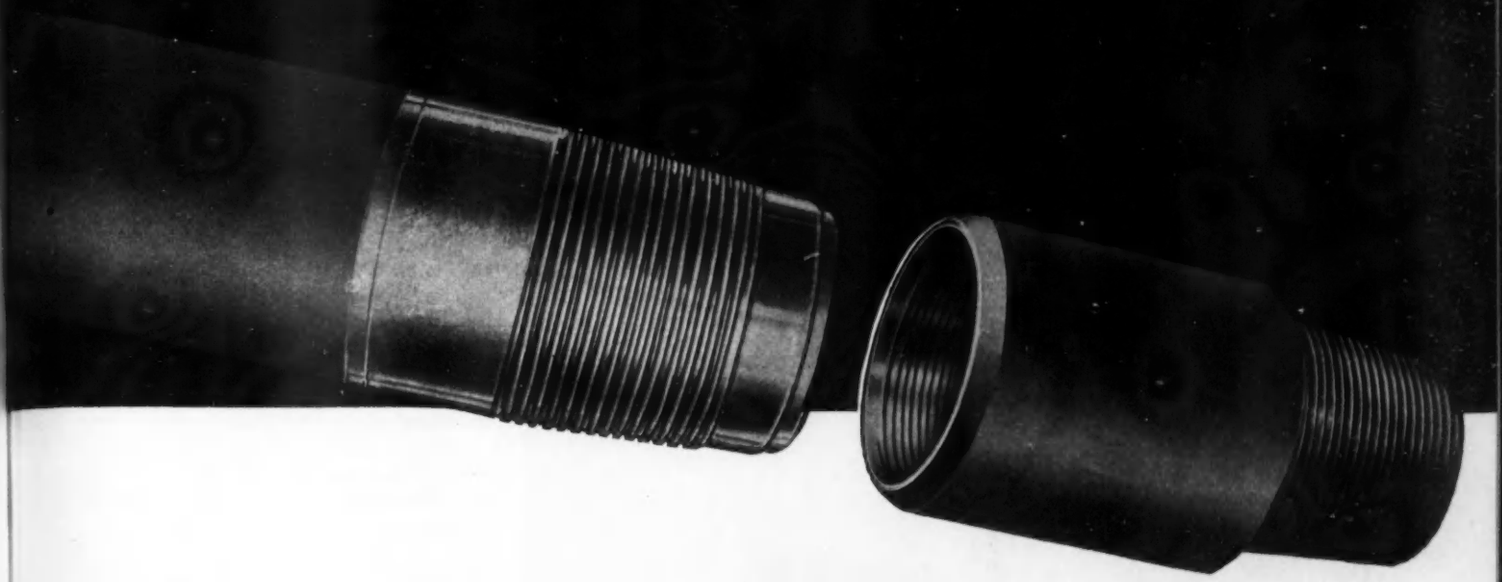
The effect of having these stress waves at certain frequencies may be seen from the tests conducted with the aid of a polished-rod dynamometer on a well at Oklahoma City, and one at Russell, Kansas. A series of dynamometer cards were obtained on each well while operating over a range of speeds. As shown by the plotted results of the Oklahoma City test, the maximum load increased approximately 3400 pounds by merely increasing the speed one stroke per minute. This one stroke per minute was enough to place the operation such that the waves were in phase, thus adding to each other. On the Russell test, the results show that a higher speed of operation does not always give a higher load. At 28 strokes per minute the operation is on a non-synchronous speed, thus showing a lower maximum load than was obtained at the slower speed of 24 strokes per minute.



These charts, made by plotting the maximum load against the speed of operation, illustrate the effect upon this maximum load of the two vibratory stress waves in the system. In the Oklahoma City test, at the line designated as 2 (which means 2nd harmonic) the natural wave was exactly in phase (by ½ frequency) with the pumping motion wave, thus increasing the load from 21,000 pounds at 17 spm to over 24,000 pounds at 18 spm. Point 2 on the Russell, Kansas test, shows an increase but is not as conclusive as that of the upper chart. The points 4-3, 3-2, etc., represent the speeds at which the waves are most out-of-phase and here the loads should be less. These are the best speeds for operation from a load stand-point. Selection of the out-of-phase speed depends upon the quantity of production desired.

SPANG *Shrink Thread* DRILL PIPE

NATIONAL *Shrink Thread* TOOL JOINTS



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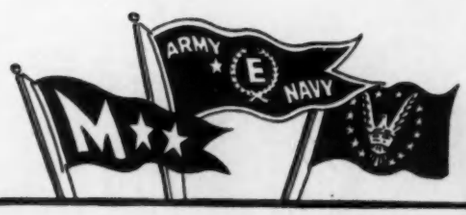

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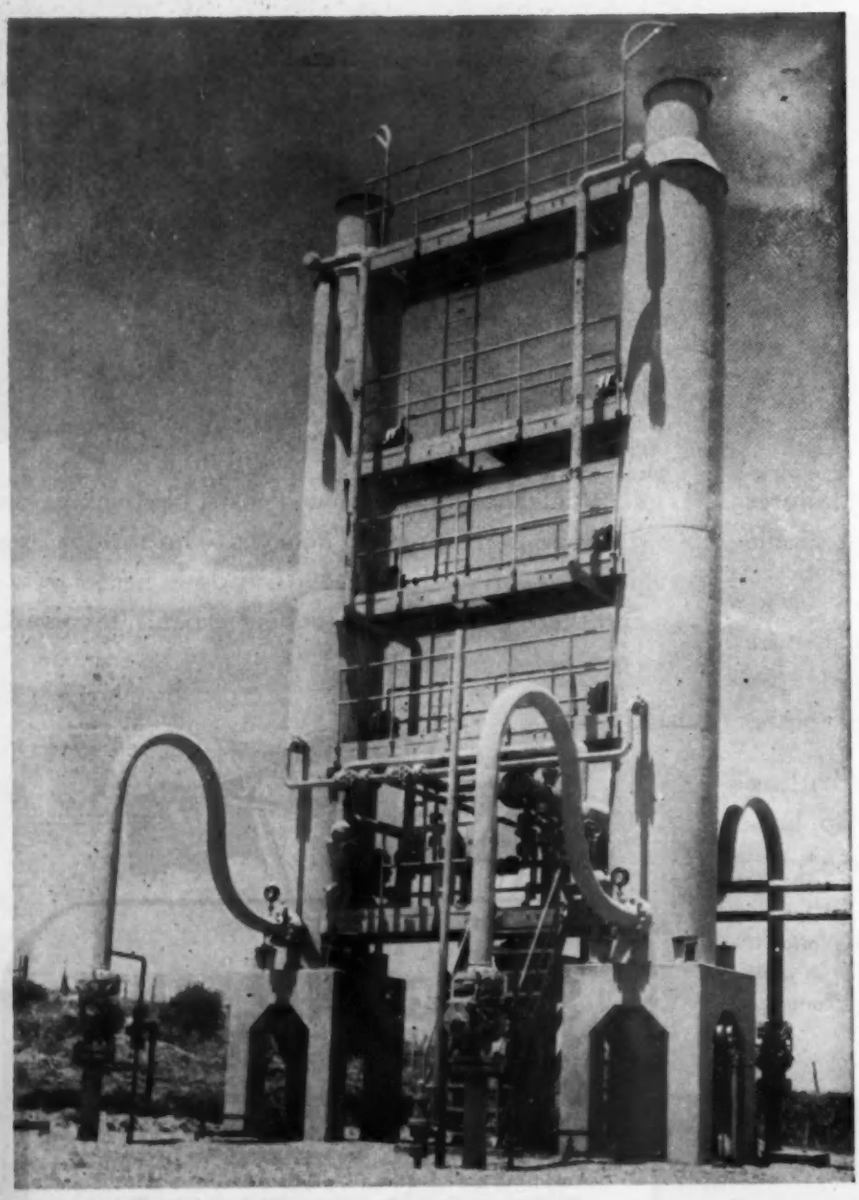
New Modern Gas Dehydration Plant in Operation

New installation is twin-towered, one side of which is regenerated while the other is actively engaged in removing water and water vapor from gas stream.



Oklahoma Natural Gas Company's modern dehydration plant recently completed to process gas from the Chickasha area of Oklahoma.—Photo by Ruth Canaday.

GAS entering Oklahoma Natural Gas Company's main line system in Oklahoma is dehydrated in a newly completed plant near Chickasha gas field, Southwest Oklahoma. The new installation is twin-towered, one side being regenerated while the other is actively removing water and water vapor from the gas stream. Built to operate at 1000-pounds-per-square-inch pressure, the plant is capable of efficiently handling 70,000,000 cubic feet daily.

The drying agent used is aluminum ore, or bauxite. In order to reactivate the compound a measured volume of hot gas is passed through the tower. This hot gas picks up the water as a vapor, carries it to a set of condenser coils cooled by the gas in the dehydration cycle, and the water is then discharged as a liquid in a special receiving tank. Measurement of the water recovered is compared with dew point, determinations of input gas as a means of control and checking of the efficiency of the operation.

Dehydration of "water-wet" gas, or gas production carrying water in vapor form, is becoming a more general practice with higher line pressures. In summer months the reduction of water vapor in the transported gas reduces the internal corrosion of the pipe particularly if there are sulphur compounds present.

In the cold months, when operating pressures are apt to be high and temperatures of both the gas and the line are low, the water vapor can combine with the gas molecule to form gas hydrates, or pipe line "ice." This compound gains volume in the line, particularly in the vicinity of an orifice, and a line freeze can easily stop the flow of gas. High pressures, low temperatures, and water vapor combine to produce this result, and elimination of the water vapor by dehydration protects gas delivery and the line.

Application of Cellulosic Foil To Mud and Cementing Operations

By CLARK CORE, Dowell, Incorporated, Lafayette, Louisiana

STUDIES on wildcat drilling by Lahee 1 shows that during the last five years, the depth of the average wildcat has increased 21.3 percent. This is indicative of a trend that will be sure to continue as exploration for new oil reserves is carried on. This trend is especially noticeable on the Gulf Coast, where most shallow-sand prospects have been explored and where many wells have established production at depths below 10,000 feet.

The drilling of wells to these increasingly deeper horizons is accompanied by numerous problems, not the least of which is the type of rotary fluid used, and its chemical treatment. Much has been learned in recent years that has been helpful in avoiding and correcting drilling problems arising from the peculiarities of the drilling fluid and its response to treatment. 2. The technical phases of mud control have been simplified greatly, permitting the practical mud engineer to solve most of the troublesome drilling difficulties arising from the drilling fluid. However, one of the most persistent problems experienced by drilling contractors and well operators—lost circulation—is encountered daily. This problem is universal wherever rotary tools are used, and is often the forerunner of serious blowouts, stuck drill pipe, difficult fishing jobs, increased completion costs, and in some instances loss of the well.

In those cases where the mud loss is low, a slight increase in the viscosity of the mud, without increasing the gel strength may be all that is required to establish normal drilling operations. In the more severe cases, however, chemical conditioning of the mud will not suffice. Then the usual practice is to add to the mud materials that will mechanically plug the openings that are taking the drilling fluid. Basically, this idea is sound and appears to offer the only solution to the problem, and many different agents have been suggested for accomplishing this wall-plastering and plugging effect.

Inasmuch as none of the mud addition agents used to regain circulation have been entirely satisfactory, studies in the laboratory and field have been conducted that have resulted in the introduction of a chemically inert, cellulosic foil that exhibits many additional desirable properties. The foil material has a thickness of 0.001 inch and is cut into pieces having a surface area varying between ½ square inch and 1 square inch. It is exceptionally tough and resistant to deterioration by all materials with which it ordinarily comes in contact in the well. A crinkled surface prevents the individual pieces from adhering to each other in dry or wet form and promotes their uniform distribution through any fluid to which they are added. The material has a density close to that of most drilling fluids so that it stays in suspension. This product has been used successfully in all types of drilling muds in wells, including those with very high temperatures, and at no time have there been observed any appreciable adverse variations in the properties of the mud that could be ascribed to its presence.

Laboratory Tests

In order to evaluate the plugging properties of material, marketed under the name of Jelflake, many laboratory tests have been performed, the early ones in standard, low-pressure, wall-building apparatus. In these tests, the equipment contained a 12-inch mud barrel so that sand could be used instead of filter paper. The sand used was water-wet, and had a screen analysis as shown in Table 1.

Table 1

Mesh Size	Percent
Through 200	10
Through 100—on 200	3
Through 50—on 100	25
Through 20—on 50	60
on 20	2

After the mud barrel was filled to a depth of 4 inches with this sand, several hundred cc's of a commercial drilling mud, weight 9.7 pounds per gallon with

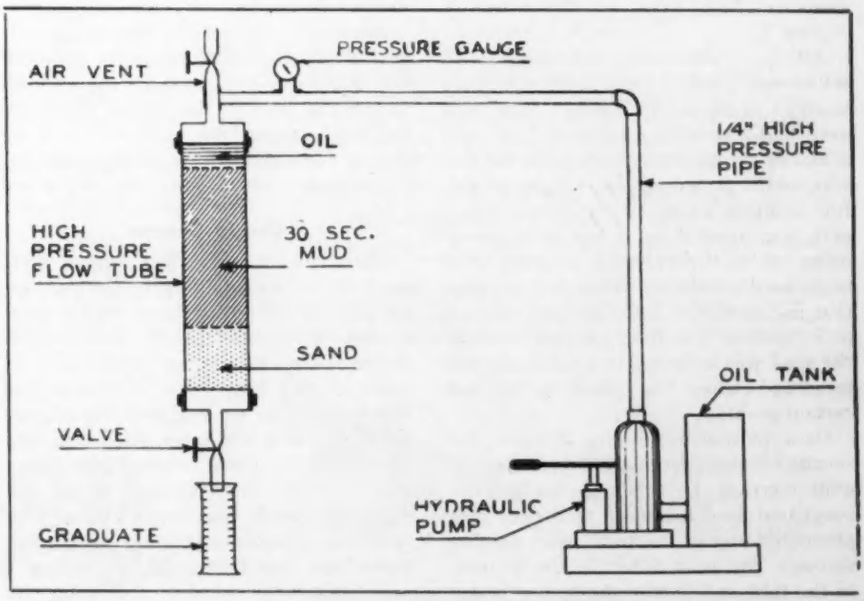


FIGURE 1

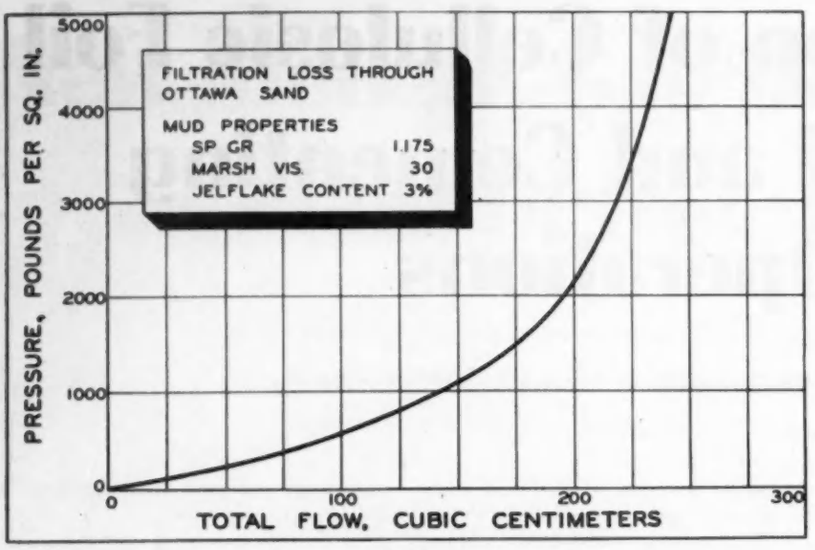


FIGURE 2

a Marsh viscosity of 66 seconds and containing 3 percent by weight of the foil material to be tested was placed in the cylinder above the sand. A pressure of 100 pounds per square inch was applied and the rate of flow of the mud through the sand observed. These tests showed that the mud loss through the sand was less than 5 cc's per minute.

These tests, although convincing, were not considered adequate to demonstrate its ability to plug the pores in sands at elevated pressures. Consequently, apparatus was constructed in which flow tests could be conducted at 5000 pounds per square inch. The equipment consisted principally of a 3-foot section of extra heavy pipe, 3 inches in diameter, to which suitable high pressure fittings were attached which permitted the application of pressure and measuring the rate of flow of mud and water through the sand. A sketch of the high pressure flow tube is illustrated in Figure 1.

All the tests were conducted with water-wet Ottawa sand with the sieve analysis as shown in Table 1. The mud used had a specific gravity of 1.175 and a Marsh viscosity of 30 seconds. To this was added 3 percent by weight of the foil addition agent to be tested. Pressure was applied by a hydraulic pump using oil as the pressure medium. The tests were conducted in such a manner that the maximum pressure was reached in 5 minutes. The fluid passing through the sand was collected in a graduate and measured when the pressure reached certain points.

Data plotted in Figure 2 show the results obtained from the 3 percent foil-mud mixture. In this test the foil-impregnated mud formed a wall cake that prevented any of the mud from passing through the sand filter in the bottom of the tube and limited the loss of water to ½ cc per minute, a remarkably low rate of infiltration considering the range of pressures under which the tests were made. Due to the character of the pieces constituting the filler, exceptionally wide coverage is obtained and pressures are withstood that would completely break down the usual types of wall-building materials.

Other laboratory studies were made to determine how this new type filler would be affected by the chemicals present in drilling muds and cement slurries. Samples were thoroughly distributed through mud mixtures containing 2 percent tannic acid, 2 percent of quebracho extract. After 10 days the foil was removed from the mud and examined. It was found not to have deteriorated, and its physical properties were the same as when placed in the mud mixture.

Other samples of the foil material were placed in contact with natural gas, crude oil, water, and various caustic solutions for 10 days. At the end of this period no appreciable changes could be noted in the material except the samples which had been in the caustic solutions. In these cases the material was as strong as originally, the only change being a slight reduction in weight.

Use In Cement

This foil material has found wide application in cementing operations, especially in Illinois where highly permeable formations were encountered above the oil producing horizons. 3. In wells of this type great difficulty was experienced in maintaining circulation during drilling and later when attempts were made to place cement behind the pipe to points high enough to protect the upper productive zones and to prevent the possible migration of oil and water from one formation to another.

Temperature surveys following its use in the cement slurry showed the cement column to have risen to a higher level behind the casing than in nearby wells where it was not used.

The ideal addition agent for cement should be light in weight, yet high in permanent strength; it should not ball up or accumulate while mixing; it should exhibit a large surface area, be very flexible and not affect appreciably, in any physical or chemical manner, the properties of the cement. The filler described in this paper possesses these properties. It has a negligible effect on the initial set of the slurry and consequently on the length of time during which it can be pumped under excessive pressure. It has been used in quantities as high as 1¼ pounds per sack of cement, but the usual amount is from ¾ pound to 1 pound per sack.

The mixing of this material with drilling mud or cement does not require any special equipment or elaborate techniques. Where it is to be used in the rotary fluid it is advisable to add the material to the mud by means of a hopper attached to the mud suction as illustrated in Figure 3. If colloidal material or other similar mud-conditioning agents are being added to the mud at the same time as the foil flakes they should be introduced through a separate hopper as a combination of these materials tend to plug the hopper. Another method often used in regaining lost circulation is to apply the cellulosic foil material to the mud pit near the mud suction pipe using a mud gun to obtain thorough mixing. Where this type of application is used it usually is desirable to raise the mud suction pipe to within a few inches of the surface of the pit so that the foil-laden mud first reaching the porous section in the well will permit more rapid plugging of the thief zones.

It has been observed that sometimes successive concentrated applications of the foil material provide better results than a large single portion, especially in those wells where the circulation has been lost. It is believed that in such cases the mud first entering the larger pores has filtered from it some of the foil, causing them to be plugged gradually. This process is accumulative and as additional slugs of foil-laden mud reach the thief zones the plugging and plastering process continues until all of the pores taking fluids are filled. The cellulosic material, being thin and very flexible, conforms to the irregular surfaces of the formation, building up a continuous impervious wall which prohibits the further appreciable ingress of fluid into the zones formerly taking large quantities of mud. A good practice based on field experience is to shut the mud pumps down for several minutes after the first slug of foil-laden fluid reaches the porous zones. This

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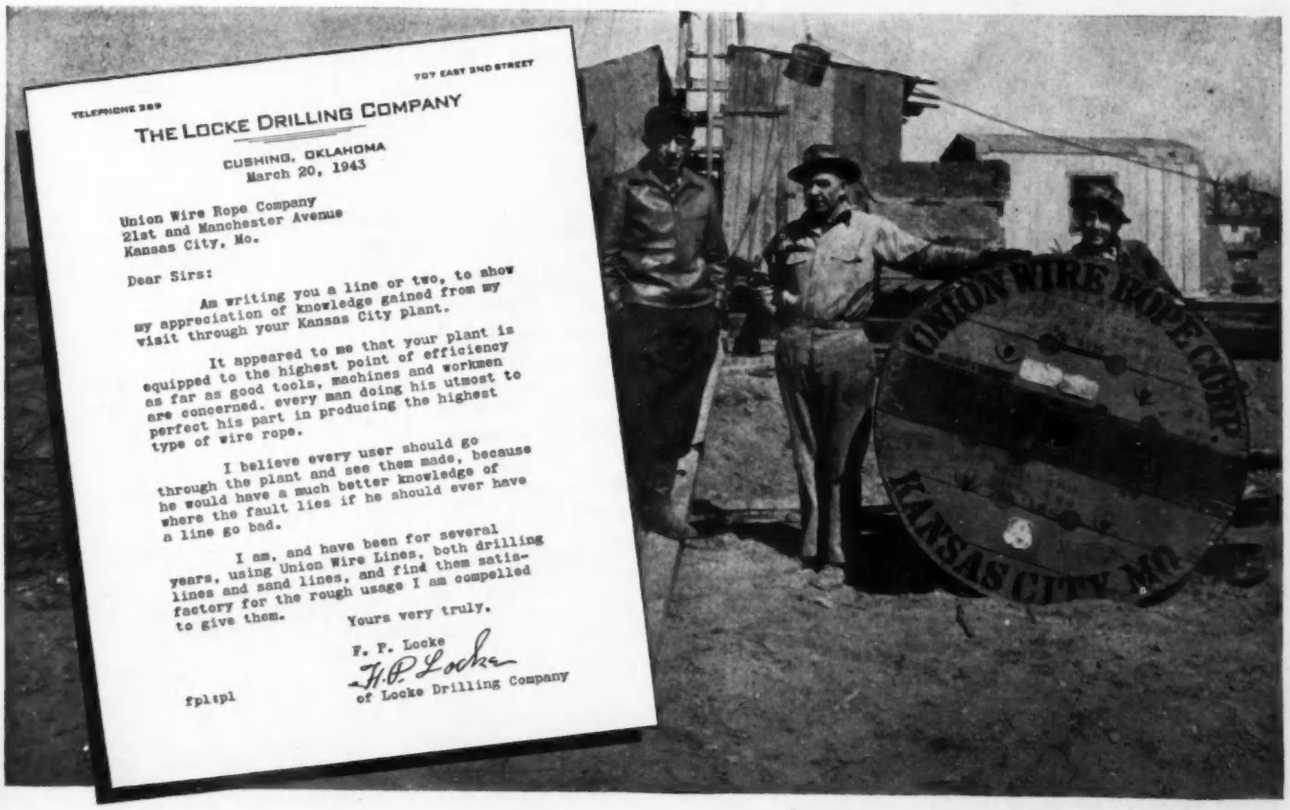
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appears to give the foil flakes a better opportunity to filter out of the mud at its point of entry into the formation without the delaying handicap caused by the action of the pumps on the mud.

The amount of foil flakes required to overcome circulation losses will vary with field conditions. In fields where experience has located the zones in which mud usually is lost the usual practice is to add approximately 2 pounds of foil flakes per barrel of mud. This application provides considerable insurance against circulation and mud losses and in those cases where the troublesome zones are penetrated with a minimum of difficulty the foil material may be recovered by passing the mud returns over a shale shaker. Any shale or other material collected by this procedure may be washed away with water. Practices such as this are not uncommon on the Gulf Coast and in some cases foil flakes have been used as many as three times with good results. In severe cases it may be necessary to increase the amount of flakes to as much as 5 or 6 pounds per barrel of mud in order to secure the desired results. There are cases on record, however, where no amount of the material was beneficial. Where the material has failed, it is believed that a cavernous or fissured condition existed.

In cementing operations the common practice is to add from ¾-pound to 1¼ pounds per sack of cement. In rare cases as much as 2 pounds per sack of cement have been used. The agent should be added directly into the cement mixing pan and never to the dry cement. The cement foil mixtures can be pumped through any type of cementing tools without any difficulty.

Results of Field Applications

Some of the most troublesome and costly lost-circulation problems have been encountered on the Louisiana and Texas Gulf Coast. In many of these wells the addition agent discussed in this paper has been used successfully to combat circulation losses.

In Acadia Parish, South Louisiana, a well, which had reached 6900 feet, encountered a zone where about 75 percent of the mud being pumped into the well was lost. At least one pit of mud was lost while trying to secure returns. A new pit of mud was prepared to which was mixed 100 pounds of foil flakes. Within 10 minutes after this mud reached the bottom of the hole, circulation was complete and within 20 minutes drilling was proceeding in a normal manner.

Another example of the use of this agent is found on the Gulf Coast where a well began to lose returns at 8127 feet. The losses continued at an increasing rate until at the end of 48 hours nearly 2000 barrels of mud had been lost. After a 24-hour period during which no circulation could be secured, a new pit of mud was prepared to which was added 800 pounds of the foil flake material. This mixture restored circulation; drilling was continued with less than a 5 percent mud loss until the casing point was reached.

These two examples are outstanding because the use of a small quantity of flakes resulted in normal operations. There have been instances where the use of greater amounts resulted in partial shut offs but drilling could proceed to the casing point. There is at least one case on record where no amount or type of filler was beneficial in restoring circulation; however, generally speaking the judicious use of cellulosic foil flake material will be found economical and highly beneficial wherever circulation losses are causing drilling and cementing difficulties.

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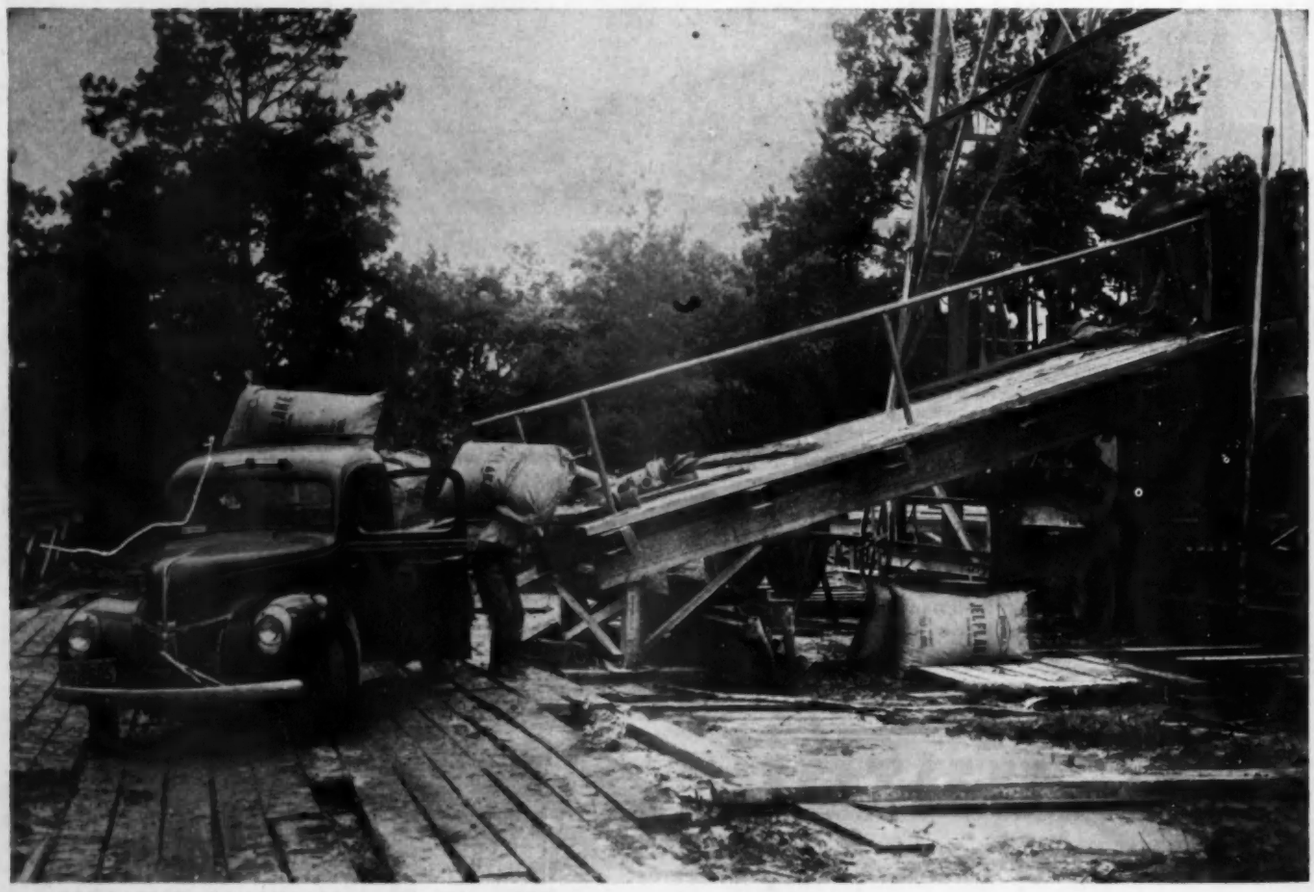

FIGURE 3

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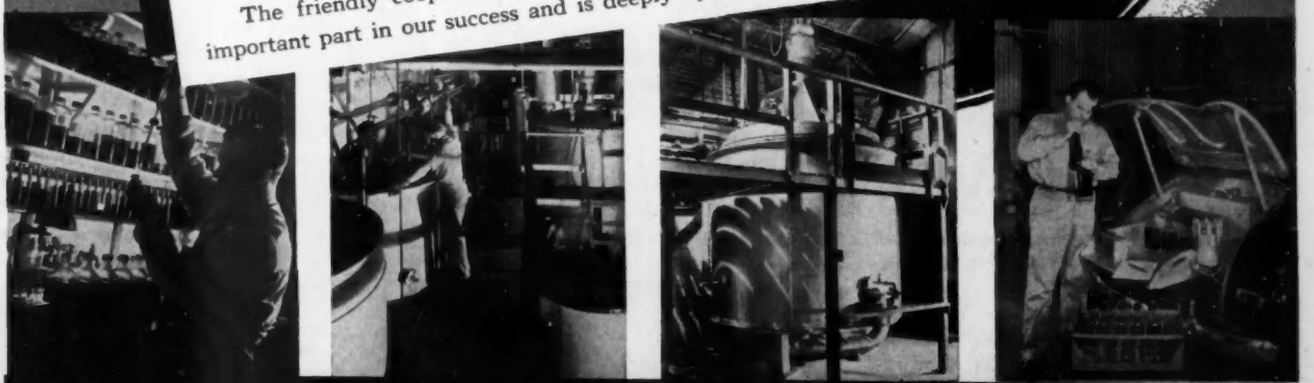

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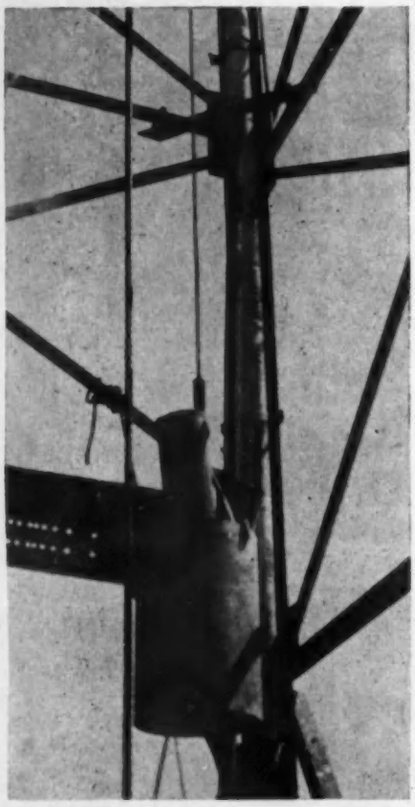
Adjustable Slide Clears Rig Floor



Fitting cross arm with clamps to match derrick braces provides rigid support to pipe rail.

PROVISION of slide or guide to keep the tong counterweight clear of working space on the derrick floor requires some type of mounting which may be readily removed, but which assures retention of the weight throughout its arc of travel.

Use of a pipe guide, with corresponding loops or eyes on the side of the weight body to slide over the pipe, requires fastening the pipe to the derrick in such position that it can stand clear and allow the full travel of the counterweight without contacting either derrick or standpipe. One such guide is welded to a cross member at its top, the member being drilled to take clamp bolts which go over and under the two derrick girts contacting at the corner of the unit. The lower end of the guide simply stands within a socket bolted to the derrick floor, the socket providing sufficient flexibility to absorb derrick shifting, expansion of the pipe or vibration of the weight without overstressing the upper mounting.

2. SAFETY

Sheet Iron Jackets Prevent Line Burns

SECTIONS of steam line between header and steam chests of a battery of feed-water pumps present a hazard to men working around them, unless insulated or shielded.

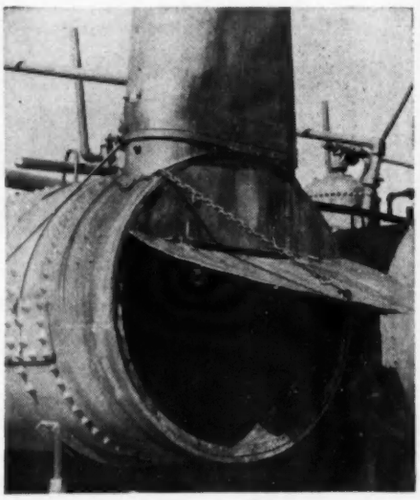
One company combined insulator and shield by forming jackets of light sheet metal, long enough to reach from ell to fitting in each direction, welding the swaged ends onto the pipe, but leaving a series of small holes or vents to permit air circulation between hot exhaust and relatively cool jacket.

The jacket, though hot to the touch, remains below the temperature at which a serious burn is caused before contact with the warm metal gives warning to permit the crewman to pull clear.

By painting jackets such as this with a heat-resisting type of red paint, the color is much less likely to burn or scale off than when applied on the steam line itself, and warns by color as well as by the change from normal steam-line size.

3. BOILERS

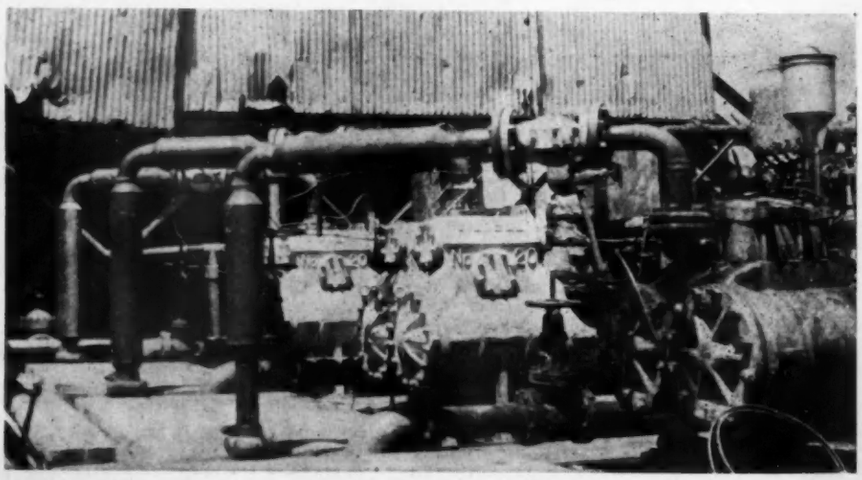
Chain Supports Aid Smoke-box Servicing



One end welded to boiler shell, this chain engages door and insures safe work space below.

THERE are several devices in common use to assist the rotary fireman in handling the heavy flue box doors when washing boilers or cleaning or examining flues. Most of these are built along the line of a miniature swinging crane which, although effective, are rather expensive to fabricate and install.

The photograph illustrates a method



Open spider at each end of these sleeves permits air circulation between sleeve and hot steam line, and maintains outside temperature below point at which serious burns might result.

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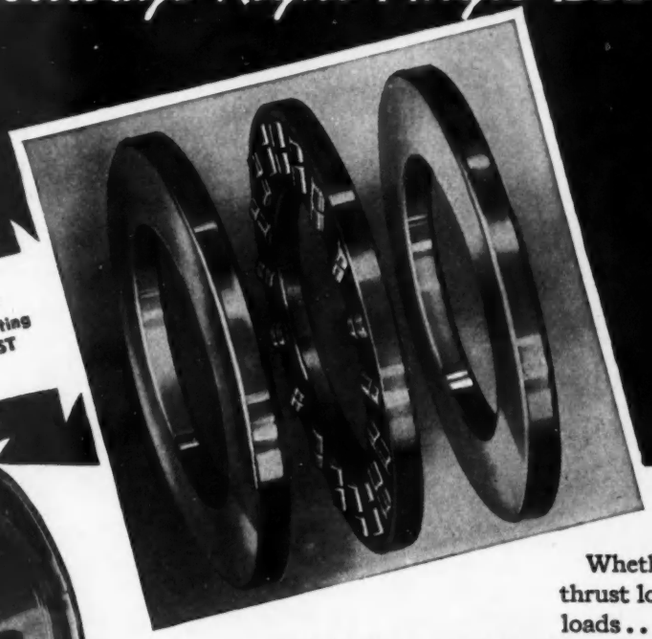

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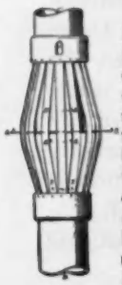

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as effective as any such device so far developed and yet is quite simple and inexpensive. Shop made heavy hinges (with a removable hinge pin) were welded to the original flue box door just above the top flue level. The door was then sectioned along this line. A small steel hook was fabricated at one end of a short piece of ⅜" chain, the other end then permanently welded to the boiler barrel. A steel loop welded to the bottom edge of the flue door completed the job.

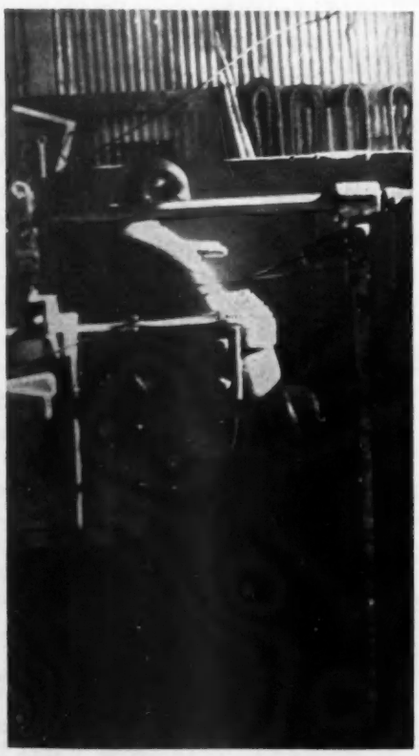
For major repairs such as rolling or replacing flues, the hinge pin can be pulled and the door completely removed if desired.

4. CONTROLS

Guide Prevents Linkage Changes

WHEN such units as the power reverse linkage are actuated through a wire line attached to a collar on the throttle rod, any slack developing may foul adjacent equipment, while the collar itself, even when well lubricated, sometimes tends to turn with the rod, winding the wire line around the rod and blocking use of the reverse linkage.

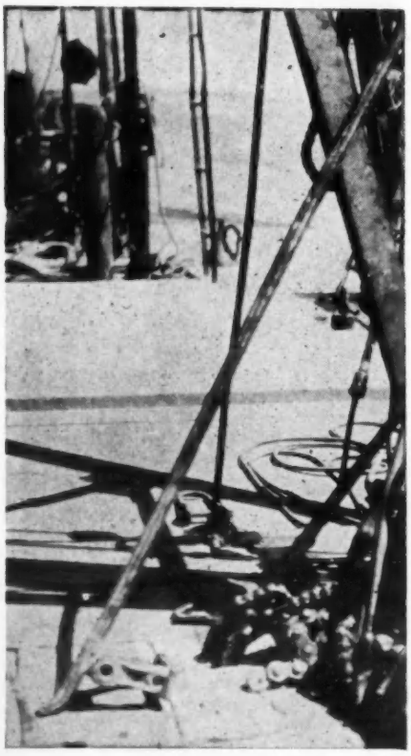
By bolting an arm to this unit at the point where the wire line is attached, and boring a hole or cutting a slot through the floor for the lower end of the arm to rest within, the collar is prevented from turning. If the floor be slotted, the arm may be bolted rigidly to the collar, while if a single bolt be used and the arm allowed to swing on it in a direction parallel to the throttle rod, a bored hole, large enough to accommodate the angularity of the arm, will suffice.



This rod, working in slot in floor, prevents twisting of wire line controlling reverse linkage.

5. HAND TOOLS

Built-in Fulcrum Speeds Bar Operation



Part of a drilling chain link, welded to bar to serve as heel, insures non-slip footing for heavy lifts.

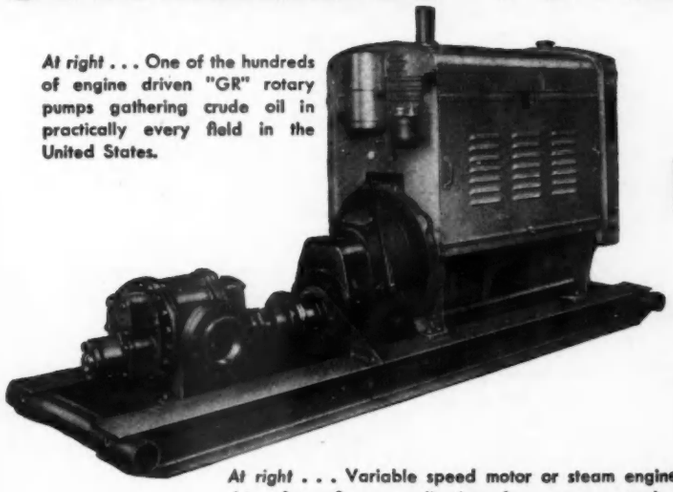
SLIPPING of an improvised heel or fulcrum for a pinch bar frequently causes equipment damage or injury to personnel, while much valuable time may be lost searching for something which will aid in making effective the lever of the bar.

One drilling contractor welds the bushing of a heavy transmission chain link to the bar, just behind the tip or tapered section of the steel. The other end of the link is shod with a jaw plate from a junked slip, so as to provide a non-slip footing.

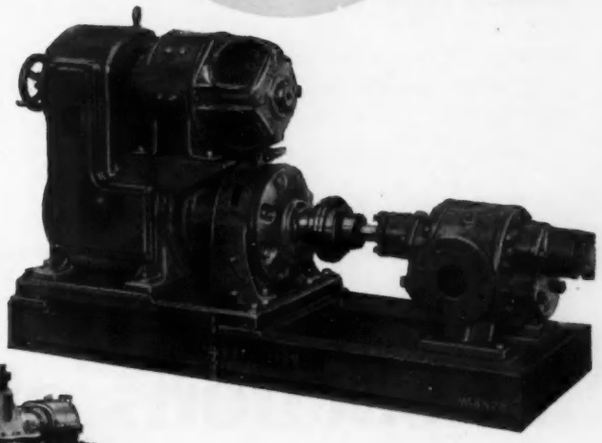
Such a fulcrum provides a low support when the link is laid flat, the device pivoting and resting on the bushing end of the heel. When a higher lift is desired, the serrated plate is set on solid footing, and the proper amount of wide blocking used below it to attain the desired height.

From GATHERING TO CARGO LOADING

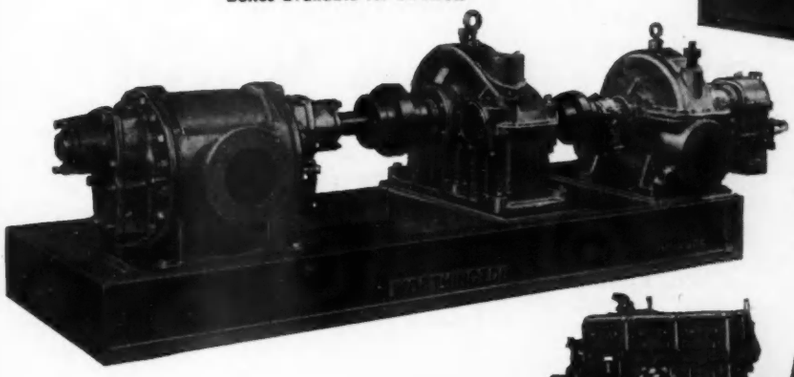
"G R" Rotary Pumps



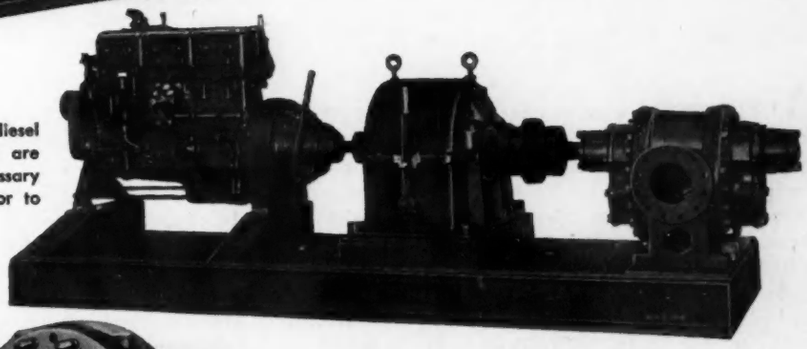
At right . . . One of the hundreds of engine driven "GR" rotary pumps gathering crude oil in practically every field in the United States.



At right . . . Variable speed motor or steam engine drive for refinery applications from greases to hot asphalts or bright stocks. Jackets for bodies or stuffing boxes available for all sizes.

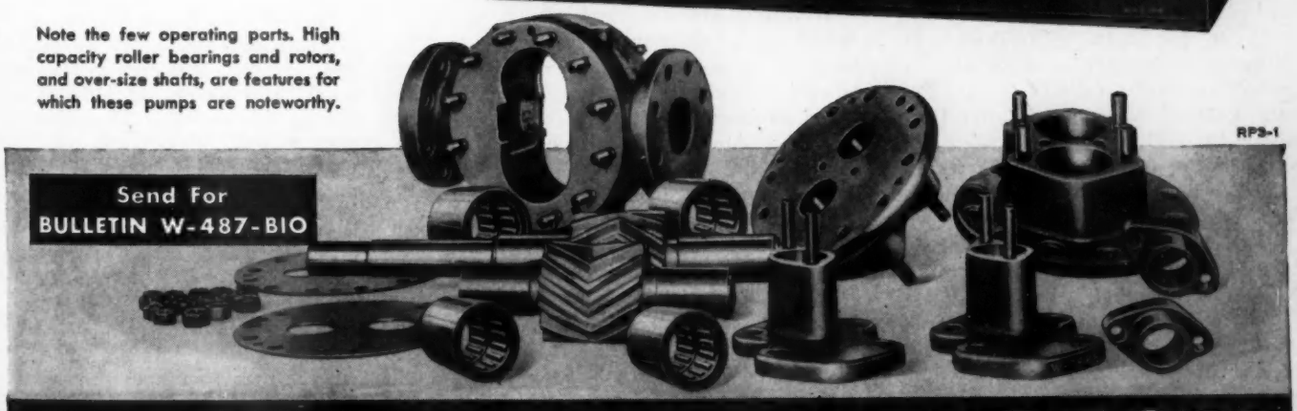


At left . . . Where steam is available to drive these cargo loading pumps Worthington-Moore steam turbines are supplied. This permits variable speeds often required.



At right . . . Two-speed geared with diesel engine or two-speed motor drives are popular for cargo loading where necessary to pump oils of varying viscosities, or to pump out a cold line.

Note the few operating parts. High capacity roller bearings and rotors, and over-size shafts, are features for which these pumps are noteworthy.



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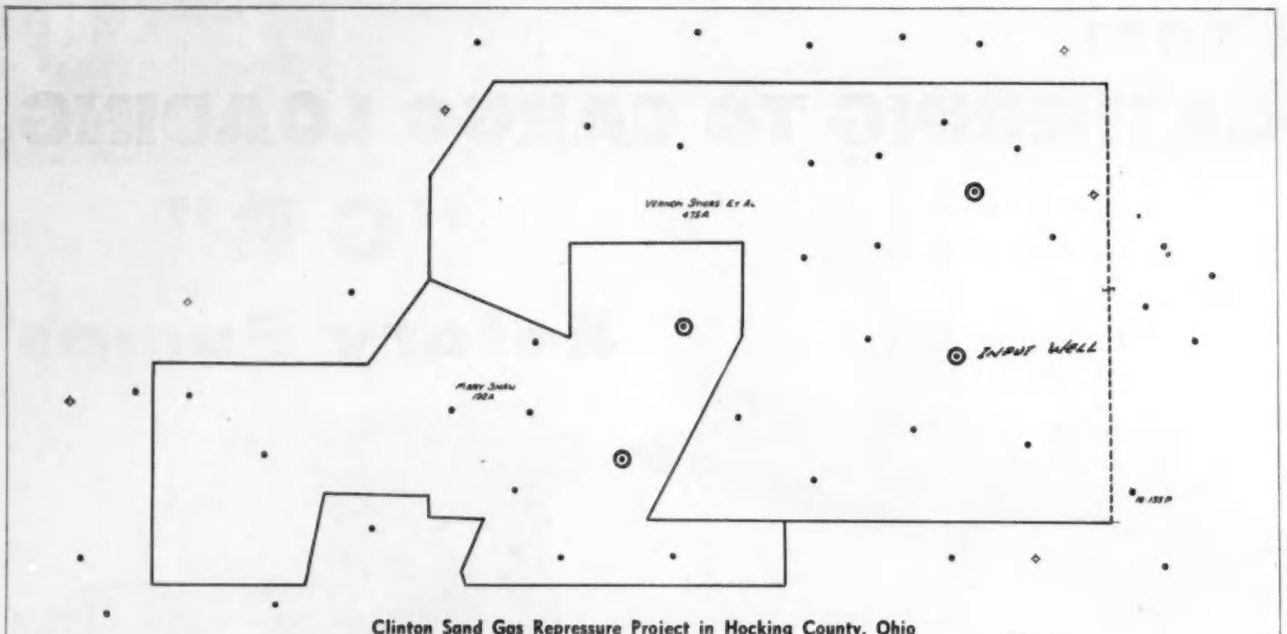


Clinton Sand Gas Repressure Project in Hocking County, Ohio

Reactions of Clinton Sand To Gas Repressuring

By JACK CASHELL, Petroleum Engineer
The Preston Oil Company, Columbus, Ohio

ALTHOUGH numerous attempts at repressuring the Clinton sand in Eastern-Central Ohio have been made in the past few years, relatively few have proven financially feasible. At present there are only two projects being operated, one of which is under supervision of the author and will be described in this article.

On October 12, 1935, The Preston Oil Company inaugurated a gas-repressure project on two leases in the Union Furnace field of Hocking County, Ohio, where Pennsylvania-grade crude oil is obtained by pumping from 25 feet of Clinton sand at an average depth of 2950 feet.

Productive limits of the pool are defined by physical sand properties rather than structural relief, it being typical of Clinton sand pools to have monoclinal structure. The sand is medium- to fine-grained in nature and possesses very low water content.

The 23 wells included in the repressure area were completed in 1915, 1916 and 1917, with average initial potentials of 150 barrels per day following a shot of 70 quarts or so. Subsequent re-shots of as high as 240 quarts aided but did not substantially increase production. Immediately prior to gas injection these wells had produced an accumulated total of 650,000 barrels and the average daily production per well was ½ barrel.

Preliminary reservoir study indicated a relatively high residual oil content zone extended diagonally across the two leases. Accordingly four producing wells located centrally in the trend were selected as inputs, with the average distance from input to producer being 1150 feet. No core analyses are available on the pool and no packers were set in the sand.

A 60-horsepower, two-stage, twin-acting feather-valve compressor station was installed, with twin coolers and drip tanks for condensate collection. A daily volume of 33 MCF at 165 pounds was injected for one month through two of the input wells, following which all producing wells were shut in for a three-week pressure equalization period. During the eqalization period the daily injected volume was increased to 75 MCF at 180 pounds and two more inputs were added.

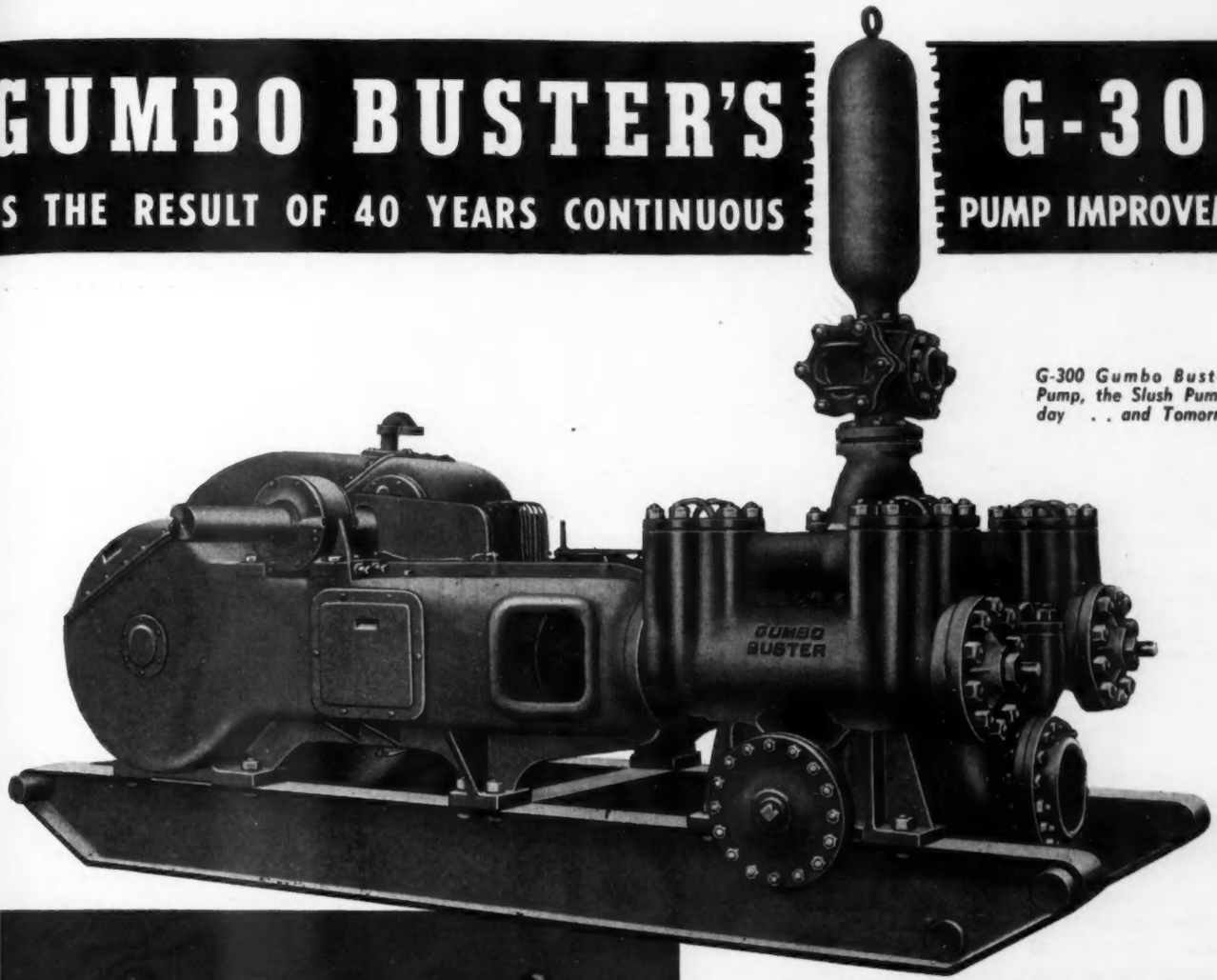
Considerable trouble was soon experienced with gas channeling at volumes approximately 100 MCF per day. However a policy of "rocking" or gradually increasing total injection volumes from 60 MCF to 100 MCF per day over four-month periods, coupled with other controlling measures caused a peak production of 1006 barrels during the twenty-third month of operation, 471 percent higher than any month since 1933. Twelve million cubic feet of gas were required to establish a cycle and only small amounts of additional gas have been required to keep operations at the most efficient level. After eight years of operation daily production still stands over 200 percent higher than that of September, 1935.

If data obtained on this project and others in the state may be considered applicable, the Ohio operator contemplating repressuring of the Clinton sand may well benefit from the following conclusions:

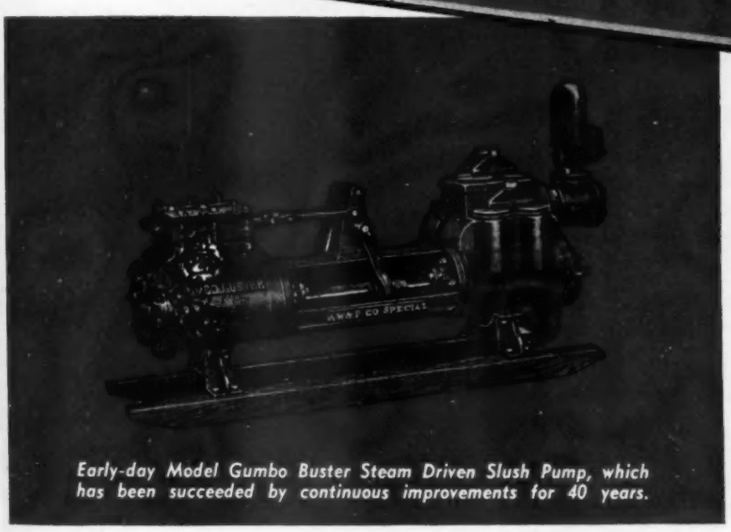
1. The per-acre recovery obtained by

GUMBO BUSTER'S G-300

IS THE RESULT OF 40 YEARS CONTINUOUS PUMP IMPROVEMENTS



G-300 Gumbo Buster Power Pump, the Slush Pump of To day . . and Tomorrow.



Early-day Model Gumbo Buster Steam Driven Slush Pump, which has been succeeded by continuous improvements for 40 years.

The Gumbo Buster G-300 Power Driven Slush Pump is a far cry from the little 8" x 5" x 10" Special Duplex Steam Pump built in the grass-root days of rotary drilling . . weight, 2,000 lbs., price, $235.00. But the G-300, pace-setter for modern-day slush pumps, is the outgrowth of that 1902 model which, in its day, was the No. 1 means of delivering fluid under pressure into drilling wells . . . for the Gumbo Buster line of pumps today represents year-by-year improvements over the original Gumbo Buster pump designed 40 years ago.

The 7¼" x 16" G-300 overhanging crank type, full roller bearing power pump develops 300 h.p. at 60 r.p.m. The all-steel (electric cast) fluid end, tested to 4,000 lbs. p.s.i., is cast in four pieces and welded together to eliminate gaskets. Twice the strength of iron fluid ends, it likewise permits welding should it cut out behind liners or valve seats.

Complete specifications of design, materials and construction on the G-300 Power Pump, and other Gumbo Buster equipment, are available by writing for Bulletin No. 802 . or in the 1943-44 Composite Catalog now being published

In addition to the G-300, Gumbo Buster also makes the following all-steel fluid end power pumps, on which specifications will also be gladly furnished; G-150, 7" x 14", 150 h.p. eccentric type and G.O.C.-225, 7½" x 14", 225 h.p., overhanging crank type.

GUMBO BUSTER PRODUCTS

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- Rotary Drilling Engines (Steam)
- Slush Pumps (Geared Power and Steam)
- Boiler Feed and High Pressure Pumps
- Crown and Traveling Blocks
- Pump Liners and Rods
- Swivels
- Slush Pump Valves and Seats
- Line and Throttle Valves (Steam)
- Reverse Clutches
- Kelly Joints
- Rig Lighting and Utility Units

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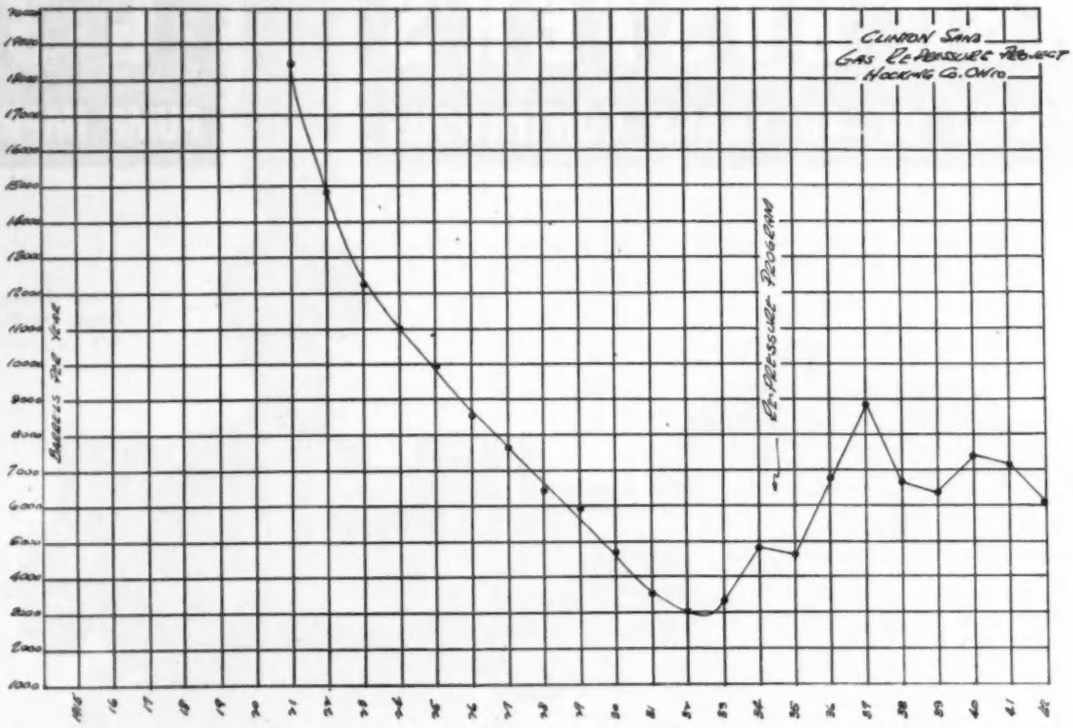
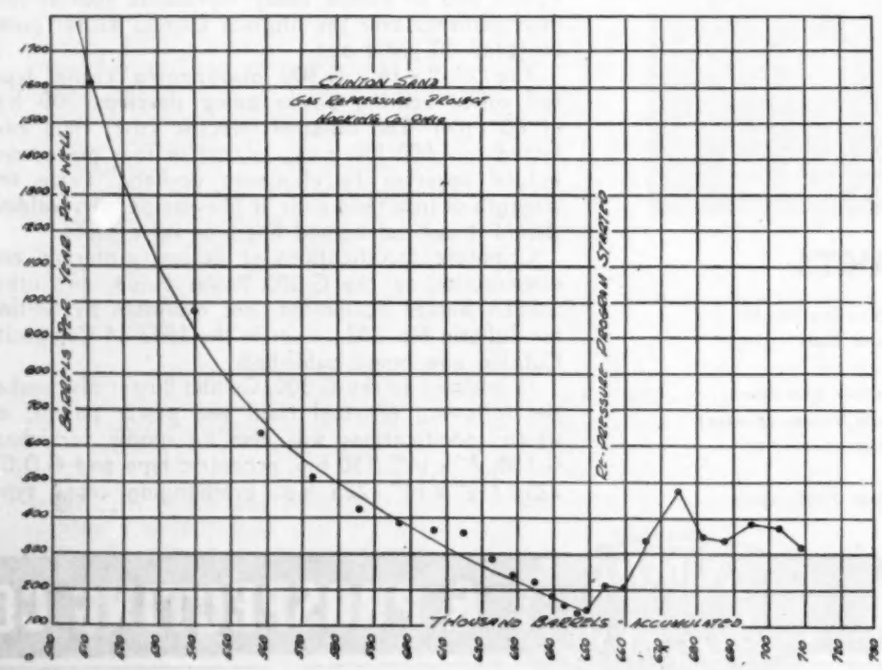


repressuring the Clinton sand is relatively low compared to other sands; however efficient recovery may be realized providing development and operational policies are carefully engineered.

2. The typical Clinton sand pool structure and physical characteristics lend themselves favorably to repressuring. Although the Clinton sand is noted for its lenticularity, gas migration is not seemingly affected. So initial-potential trends have proven surprisingly accurate indicators for gas-migration predictions.

3. Rocking of input volumes over three- or four-month cycles seems effective in the Clinton sand, with most efficient per-well volumes tentatively appearing to be between 10 and 25 MCF per day for a producing-input well ratio of 6 to 1, and producer to input distance of 1150 feet.

4. Gas channeling is seemingly more difficult to control at lower producing-input well ratios than at higher ratios. In other words, a pattern of eight producers to one input is more easily controlled than a six to one ratio for the same acreage, probably as a result of non-uniformity of drainage throughout the sand prior to injection in the latter case.



5. On projects to date approximately two years have been required to attain peak production followed by a decline rate closely paralleling that of pre-injection production.

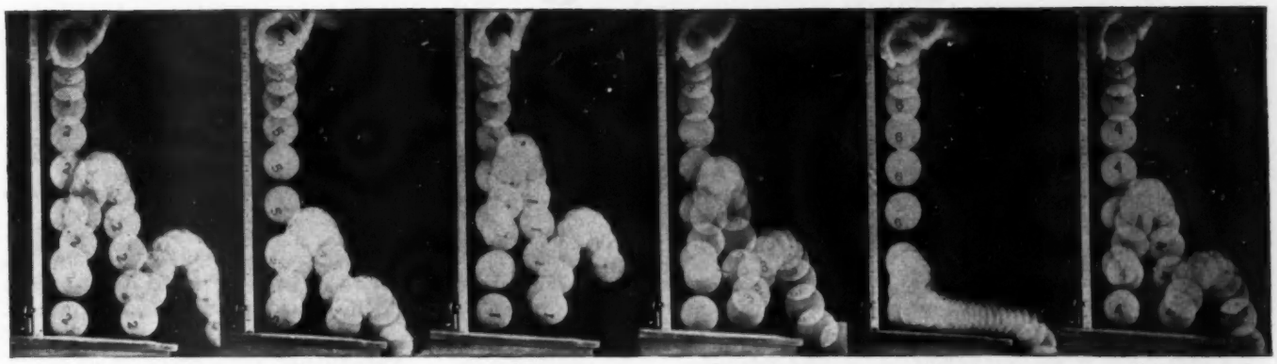
6. Alternating input wells offers a slight aid in combating gas channeling, however input wells are usually very slow in coming back on production.

7. Enforced proration during a portion of the life of the project discussed not only partially camouflaged the true results of the program but also served to illustrate that oil production should be kept at a maximum once effects of the program are evidenced, insofar as control of channeling will permit for maximum efficiency.

8. Expert core analyses of the type necessary for study of a pool's secondary-recovery potentialities have never been made on the Clinton sand, and very little preliminary work ever preceded a project. It is quite possible that such analyses would reveal facts permitting much higher recoveries by efficient operators.

9. The operator contemplating a repressuring program should keep in mind the elemental facts that (a) he is entering into a specialized field of petroleum engineering, and a competent engineer, if only in an advisory capacity, may easily mean the difference between success and failure (b) successful repressuring involves total recovery rather than immediate large increases in production, and (c) above all, contrary to the apparent opinion of many, a barrel of oil in the tank is not necessarily worth two in the reservoir.

BOUNCE, BALLS, BOUNCE!



2 (Synthetic) 5 (Synthetic) 1 (Natural) 3 (Synthetic) 6 (Synthetic) 4 (Synthetic)

SIX SOLID BALLS OF RUBBER caught in the act of bouncing by a high-speed camera that shoots at the speed of 1/6592 of a second. All of them were dropped from exactly the same height...and yet, what a difference there is! One of the balls is made of a compound containing natural rubber. Each of the other five balls contains one of the five major types of synthetic rubber.

Can you pick out which of the balls is made of the rubber used in making Army barrage balloons? Which rubber is being used today for making tires for military and essential civilian cars? Which one is used for bullet-sealing gasoline hose? Which for insulating tape? Which for making lacquer hose? Try your skill. You will find the answers to these questions in the box at the bottom of this page.

SYNTHETIC RUBBER IS NOT JUST ONE NEW KIND OF RUBBER

It is a whole family of new materials each with its own important uses

Bounce the balls as much as you please. One bounces high. One bounces low. One bounces in between. Which one is best? Actually, there is no one "best kind" of rubber for every purpose. Without all of these main types of synthetic and natural rubber, it would be impossible to beat our enemies and bring our victorious men home as swiftly as possible.

The rubber industry, the chemical and petroleum industries, the Government, working as a team, have made this achievement possible. By pooling all their experience with synthetic rubber, their resources, their skill, they have broken the threat of "rubber shortage" the Axis counted on to throw us out of the war. More than that, they have produced types of synthetic rubber that can do special jobs better than they have ever been done before... and for all time declared our independence from any future cut-off of the nation's rubber supply.

That is the true meaning of the synthetic rubber program. We are proud to have contributed our experience and our resources to doing this job... and doing it in record-breaking, history-making time.

What the future holds for synthetic rubber is not yet fully known. Yet this much is certain. When the war is won, the knowledge we are gaining every day through the use of all these synthetic rubbers, alone and with natural rubber, will make peacetime products... whether tires for your car, belts for your factory, waterproof footwear for your children, or gasoline hose for your service station...better and more serviceable than they have ever been before.

THEY MAY LOOK LIKE "SIX OF A KIND" BUT HERE ARE THE ANSWERS TO THE WAR JOBS EACH ONE CAN DO

1. This ball was made with natural rubber...today used in limited quantities in combination with synthetics because of our small reserve stock.

2. Used for tires, conveyor belts, fire hose and many other products. It is most like natural rubber and can be quickly and efficiently processed.

3. Used for making solvent and lacquer hose and other products where the utmost resistance to solvents is needed...better than natural rubber for these purposes.

4. Used for making bullet-sealing fuel hose for planes and for other uses where high resistance to aromatic fuels is essential.

5. Used for coating barrage balloons, tank linings, packings, acid hose, wires and cables. This type does not support combustion and is highly resistant to sunlight and chemicals.

6. Used for insulating tape, molded parts. It is soft, pliable and odorless.

Listen to United States Rubber Company program, featuring New York-Philharmonic Symphony Orchestra, Carl Van Doren, and a guest star, broadcast over Columbia network every Sunday afternoon 3:00 to 4:30 P. M. Eastern War Time

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UNITED STATES RUBBER COMPANY

Earnings of Larger Oil Firms Above Levels of Last Year

By L. J. LOGAN, Associate Editor

OIL company earnings have been comparatively good so far this year, in spite of high federal income taxes and high operating costs, as volumes of business have been large, in reflection of heavy wartime demand. However, an important factor in bringing about the relatively good earnings reports has been the inability of the companies to make normal expenditures for drilling. Insofar as the customary expenditures have not been made, reported earnings have been artificially increased.

For the first half of 1943, oil-company earnings in most instances have been above those in the corresponding period of 1942, and this experience has been due in part to the fact that earnings in the second quarter of last year were very adversely affected by the full impact of problems and handicaps that suddenly descended upon the industry in consequence of the involvement of the United States in the war. In that period, oil transportation was badly disrupted, and solutions to the transportation problem still had to be worked out. In the first half of this year, oil movement was back nearer to normal from the standpoint of volume moved, and quantities of oils sold were correspondingly up.

Net earnings of 24 oil companies, as tabulated herewith, were 19 percent greater in the first 6 months of 1943 than in the corresponding months of 1942; and they also were larger than in the similar period of the several years prior to 1942.

Earnings this year have been fairly stable, having been only slightly larger in the second than in the first quarter, although the volume of business handled was greater in the second period, in reflection of the growing war demand. (It is normal for business volume to increase in the second quarter, but under gasoline rationing, this normal variation is largely eliminated as far as that product is concerned; and war requirements now mainly account for any increases in oil use).

The total demand for all oils apparently was practically the same in the second quarter of 1943 as in the like period of 1942, but for the first quarter of this year there had been recorded a decrease of about 9 percent, because demand had remained close to record levels in the early part of 1942. Thus the total demand was appreciably lower for the first 6 months of 1943 than for the like months of 1942, although curtailed use of gasoline was partially offset by increased requirements for some war products.

However, the oil industry as a whole recorded somewhat greater gross income in the first half of 1943 than in the like period of 1942, because of several factors; and for some individual companies, gains in gross income were substantial, as in the case of producing companies that gained widened market through improvement of the transportation situation.

As shown in an accompanying table, 15 companies had almost 15 percent more gross income this year than last year for the first 6 months.

The factors which made possible this

Earnings of 24 Oil Companies for First Half of 1943 Are 19 Percent Above 1942

(Figures indicate net income after all deductions, including interest, depreciation, depletion, amortization, federal taxes, minority interest, etc., unless otherwise noted.)

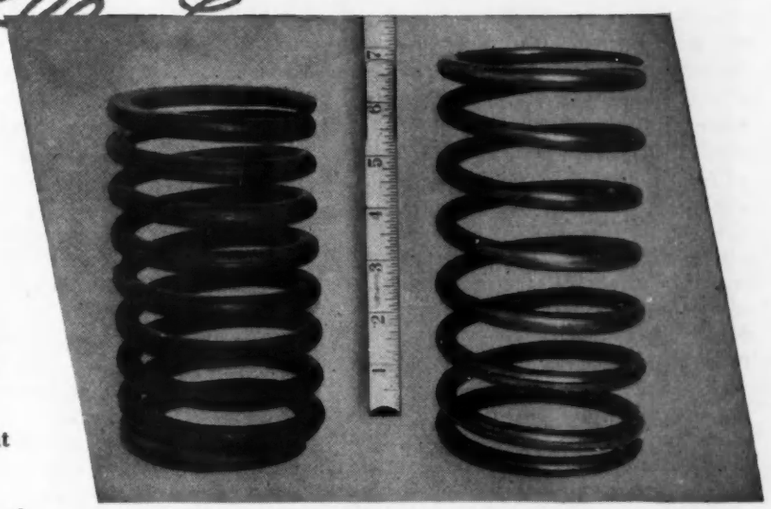
	SECOND QUARTER						FIRST 6 MONTHS					
	1939	1940	1941	1942	1943	Percent Change 1942–1943	1939	1940	1941	1942	1943	Percent Change 1942–1943
Amerada Corporation	$ 355,228	$ 425,943	$ 593,642	$ 510,065	$ 708,239	+ 38.8	[5]$ 674,989	[5]$ 885,364	[5]$ 1,100,286	[5]$ 1,208,352	[5,6]$1,658,239	+ 37.2
Atlantic Refining Company	815,000	[2]2,143,000	[2]2,315,008	[4]2,813,985	[3]1,357,097	.....	1,353,000	5,266,000	5,063,000	[4]1,576,950	2,691,097	.....
Continental Oil Company	2,069,280	1,007,852	2,642,082	2,379,265	3,522,489	+ 48.0	2,537,280	2,388,286	3,857,664	5,923,430	6,857,965	+ 15.7
Derby Oil Company	[2]65,527	[2]51,625	[2]161,661	[2]56,404	[2]112,938	+100.2	24,435	36,410	173,582	95,881	201,762	+110.4
Houston Oil Company	124,065	96,106	257,951	164,469	456,073	+177.3	527,507	574,609	681,231	677,158	828,333	+ 22.3
Lion Oil Refining Company	226,997	207,780	[6]313,693	309,168	406,805	+ 31.5	215,178	378,741	440,337	563,362	657,624	+ 16.7
Ohio Oil Company	[2]154,993	[2]2,366,103	[2]2,843,043	[2]2,890,119	[2]3,308,447	+ 14.4	[4]142,559	4,658,397	4,776,815	5,843,194	6,432,526	+ 10.0
Panhandle Producing & Refining Co.	[1]32,801	[4]29,918	67,936	13,270	[1]122,893	+826.0	[1]21,201	[4]16,886	89,833	48,316	181,031	+274.6
Phillips Petroleum Company	[2]2,288,536	[2]3,091,578	4,928,788	[2]3,366,868	[2]3,747,980	+ 11.3	3,774,069	6,378,198	8,236,680	6,731,419	7,345,314	+ 9.1
Plymouth Oil Company	552,941	412,378	382,371	[2]334,453	[2]550,649	+ 64.6	1,172,704	998,819	628,177	798,729	1,099,161	+ 37.6
Quaker State Oil Refining Company	277,584	[4]131,872	698,791	252,200	298,626	+ 18.4	554,790	159,245	916,846	681,294	601,992	— 11.6
Seaboard Oil Company	384,380	259,543	317,238	220,771	419,101	+ 89.8	785,431	762,492	581,596	491,701	[5]914,199	+ 85.9
Skelly Oil Company	517,838	771,680	1,770,829	908,433	1,334,750	+ 46.9	756,918	1,544,961	2,669,746	2,208,469	2,566,675	+ 16.2
Standard Oil Company of California	3,891,587	5,834,872	7,970,883	7,867,084	8,726,387	+ 10.9	7,117,604	10,369,495	12,770,067	13,324,036	15,136,633	+ 13.5
Superior Oil Corporation	35,722	32,434	68,437	73,612	43,438	— 40.9	51,868	76,978	[5]118,025	52,070	88,859	+ 70.6
Texas Pacific Coal & Oil Company	[4]209,452	[4]113,148	[4]273,907	140,347	269,621	+ 92.1	415,812	292,840	469,505	406,899	489,951	+ 20.4
Tide Water Associated Oil Company	1,097,228	2,124,645	[3]3,387,297	[2]1,838,060	[3]3,568,336	+ 94.1	2,331,410	5,904,865	6,247,247	5,037,098	6,255,584	+ 24.1
Union Oil Company of California	1,596,509	1,248,232	1,902,889	[2]2,131,389	[2]1,808,633	— 15.1	2,651,144	2,014,380	3,175,895	2,859,769	3,084,563	+ 7.8
Universal Consolidated Oil Company	173,680	84,489	124,591	28,262	[2]52,268	+ 84.9	370,927	161,709	126,552	59,348	96,013	+ 61.7
Total 19 Companies	$14,869,348	$20,109,618	$31,021,037	$20,670,254	$30,814,770	+ 49.0	$25,193,708	$42,834,903	$52,123,084	$45,433,575	$57,187,521	+ 25.8
Darby Petroleum Corporation	.....	.....	.....	.....	.....	.....	$ 2,260	$ 131,387	$ 317,943	$ 334,479	$ 494,919	+ 47.9
Socony-Vacuum Oil Company, Inc.	.....	.....	.....	.....	.....	.....	[3]17,000,000	[3]22,000,000	[3]13,000,000	[3]15,500,000	[3]15,000,000	— 3.2
Standard Oil Company of Indiana	.....	.....	.....	.....	.....	.....	14,979,694	20,497,223	21,763,134	19,390,000	22,079,418	+ 13.8
Sun Oil Company	.....	.....	.....	.....	.....	.....	1,085,898	4,973,265	5,168,431	3,677,091	5,711,593	+ 55.3
Sunray Oil Corporation	.....	.....	.....	.....	.....	.....	349,413	261,191	305,729	420,426	446,715	+ 6.2
Total 5 additional companies, first 6 months only	.....	.....	.....	.....	.....	.....	$33,417,265	$47,863,066	$40,555,237	$39,321,996	$43,732,645	+ 11.2
Total 24 companies	.....	.....	.....	.....	.....	.....	$58,610,973	$90,697,969	$92,678,321	$84,755,571	$100,920,166	+ 19.0

*Net loss. [1] No provision for federal taxes. [2] Based on comparison of company's reports for first quarter of fiscal year and the six month's period. [3] Estimate by company. [4] After allowances for statutory deductions and credits, no provision made or considered necessary for federal income and excess profits taxes. [5] Compiled from first and second quarter reports. [6] Estimated on basis of semi-annual report.

After heat and corrosion have launched their attack—

THERE'S STILL PLENTY OF SPRING

IN THESE 4 NICKEL ALLOYS



Finding a suitable valve spring to withstand superheated steam at 750° F. was a real problem. Regular carbon springs were practically useless. Various other alloys lasted only 3 to 4 weeks. Finally springs made of heat-resisting Inconel were installed. After 5 years' service, all Inconel springs are still in constant use.

When heat, alternating stresses, rust and corrosion go on the offensive, springs of ordinary metals withdraw, listless, lifeless.

However, four high-nickel alloys, Monel, "K" Monel, "Z" Nickel and Inconel, stand up admirably in this severe service.

All can be used in helical, spiral and flat springs of every shape and size.

They have high endurance limit . . . good strength . . . unusual stiffness. All are immune to rust and stubbornly resist most common corrosives.

But the individual characteristics of these nickel alloys vary to such an extent that each is equipped to do certain types of jobs best. Following is a brief story on each:

MONEL—67% nickel, 30% copper—Lowest in cost, Monel is widely used for rustproof, corrosion-resisting springs that are moderately stressed. It is slightly magnetic and may be used at temperatures up to 500° F.

"K" MONEL—66% nickel, 29% copper, 2¾% aluminum—A non-magnetic alloy with high spring properties and excellent corrosion resistance. "K" Monel is heat-treatable, and may be used at temperatures up to 500° F in springs under fairly high stresses.

"Z" NICKEL—98% nickel—A heat-treatable alloy with excellent spring properties plus the corrosion resistance of Pure nickel. "Z" Nickel has good electrical conductivity and is moderately magnetic. Temperatures up to 400° F have little effect on its spring properties.

INCONEL—80% nickel, 13% chromium—A heat-resisting alloy for springs operating at temperatures up to 700° F. Inconel is resistant to corrosion by a wide variety of chemicals.

• • •

For further information please send for a copy of "New Spring Alloys for Tough Jobs." Please address: The International Nickel Company, Inc., 67 Wall Street, New York, N. Y.

★ ★ **INCO NICKEL ALLOYS** ★ ★

MONEL • "K" MONEL • "S" MONEL • "R" MONEL • "KR" MONEL • INCONEL • NICKEL • "Z" NICKEL

Sheet...Strip...Rod...Tubing...Wire...Castings

Oil Companies Show Gains in Gross Income on Sales

COMPANY	First Quarter			Second Quarter			First Six Months		
	1941	1942	1943	1941	1942	1943	1941	1942	1943
Amerada Corporation	$ 3,204,257	$ 4,207,072	$ 4,851,976	$ 3,643,054	$ 3,646,119	$ 4,438,183	$ 6,847,311	$ 7,853,191	$ 9,290,159
Atlantic Refining Company	34,572,720	44,254,673	42,567,311	39,208,227	41,479,843	50,576,884	73,780,947	85,734,516	93,144,195
Continental Oil Company	19,736,049	26,573,109	26,326,725	25,342,691	27,976,690	30,485,142	45,078,740	54,549,799	56,811,867
Houston Oil Company	1,904,713	2,207,610	2,067,949	1,686,782	1,722,949	2,205,950	3,591,495	3,930,559	4,273,899
Ohio Oil Company	13,715,336	17,428,310	17,940,607	16,532,268	19,583,525	18,762,746	30,247,604	37,011,835	36,703,353
Panhandle Producing & Refining Company	576,059	837,145	785,693	922,242	884,150	1,070,873	1,498,301	1,721,295	1,856,566
Phillips Petroleum Company	28,389,692	32,535,438	34,852,839	34,042,034	36,867,898	39,303,701	62,431,726	69,403,336	74,156,540
Quaker State Oil Refining Company	8,430,495	7,500,970	6,966,692	6,607,060	6,447,383	7,777,575	12,037,555	13,948,353	14,744,267
Seaboard Oil Company	1,546,803	1,916,941	2,367,167	1,717,416	1,717,211	2,516,584	3,264,219	3,634,152	4,883,751
Skelly Oil Company	9,270,948	10,887,300	10,389,090	11,994,759	11,632,880	11,885,583	21,265,707	22,520,180	22,274,673
Standard Oil Company of California	9,321,367	12,873,925	16,753,610	13,828,207	15,166,900	20,743,992	23,149,574	28,040,825	37,497,602
Superior Oil Corporation	368,263	375,904	351,296	346,089	347,528	358,223	714,352	723,432	709,519
Texas Pacific Coal & Oil Company	785,987	1,020,467	901,644	937,565	809,834	989,026	1,723,552	1,830,301	1,890,670
Total 13 companies	$128,822,689	$162,618,864	$167,122,599	$156,808,394	$168,282,910	$191,114,462	$285,631,083	$330,901,774	$358,237,061
Sinclair Oil Corporation	.....	.....	.....	.....	.....	.....	116,816,659	144,003,234	149,190,643
Sun Oil Company	.....	.....	.....	.....	.....	.....	72,175,877	122,866,500	177,861,822
Total 15 companies	.....	.....	.....	.....	.....	.....	$474,623,619	$597,771,508	$685,289,526

gain in total income or sales in the face of somewhat curtailed volume of oil marketed included the following: (1) Some increases in crude-oil prices, including those ranging up to 25 cents a barrel for heavy California oil, effective April 1, 1943; and small advances granted from time to time in various districts and fields scattered over the country; (2) adjustments by OPA on fuel-oil prices, permitting slightly higher realizations by refiners; (3) increased sales of aviation gasoline and other war products selling at comparatively good prices.

Companies operating in California showed important increases in gross sales for the first half of this year, not only because of increased crude prices but also because of increased production of crude, the output in that state having been expanded more than 20 percent. Some producing companies of the Southwest also recorded increases in revenue, although primarily because of larger production, with more market outlet provided. However, there were slight increases in crude prices in the Texas Panhandle, North and West Central Texas, and some other districts of the Southwest. Texas as a whole produced 8 percent more oil in the first half of 1943 than in the like period of 1942, although increases were confined to the Gulf Coast and Eastern Texas, with other districts showing declines. Kansas recorded a 20-percent gain in production, North Louisiana 14 percent, South Louisiana 2 percent, New Mexico 15 percent, Wyoming 4 percent. Arkansas output was practically unchanged. For the United States as a whole, oil production from January through June, 1943, was approximately 4 percent larger than in the corresponding period of 1942.

However, there were decreases in production in various states and districts, and gross income and profits on operations in those areas were adversely affected. The declines included 28 percent in Illinois for the first 6 months of 1943 compared with the like months of 1942, 25 percent in Indiana, 37 percent in Mississippi, 43 percent in Nebraska, 14 percent in Oklahoma, 10 percent in Montana, 10 percent in Ohio, 5 percent in New York, 10 percent in Pennsylvania, 6 percent in West Virginia, 7 percent in North Texas, 6 percent in West Texas, 11 percent in Southwest Texas, and 12 percent in South Central Texas. Lower production in the Appalachian states was partially offset, however, by the fact that average prices were higher, as present postings were not set up until March 26, 1942, when there was a 25-cent advance.

While the amount of crude oil produced in the United States in the first half of 1943 was the greatest on record for that period in any year, the volume of crude charged to stills also was a new record. The runs to stills were 2.5 percent greater than in the first 6 months of 1942, although California largely accounted for the increase, with runs up 25 percent, while the Middle West also registered a nominal increase of 1 percent. Income and earnings on refining operations naturally reflected these experiences.

For the first half of 1943, oil company earnings were affected by federal income taxes in about the same proportion as they were in the first 6 months of 1942. Fifteen companies, as shown in a table herewith, showed profit before federal income taxes amounting to $141,479,519, or 20.5 percent more than the $117,336,304 reported for the first half of 1942. The same companies set aside $60,650,715 for taxes on this year's first 6 months, or 24 percent more than the $48,893,618 provided in last year's first half. After deductions for the federal income taxes, the 15 companies had left $80,828,804 of net profit, or 18 percent more than the $68,442,686 reported for the first 6 months of 1942.

Federal Income Taxes of Fifteen Oil Companies Are Up Relatively More than Income

	Net Income Before Federal Taxes			Federal Income Taxes			Net Income After Federal Taxes		
	6 Months 1941	6 Months 1942	6 Months 1943	6 Months 1941	6 Months 1942	6 Months 1943	6 Months 1941	6 Months 1942	6 Months 1943
Atlantic Refining Company	$ 7,066,100	*$ 1,161,250	$ 4,500,997	$ 2,033,100	†$ 415,700	$ 1,809,900	$ 5,063,000	*$ 1,576,950	$ 2,691,097
Continental Oil Company	6,146,615	9,317,624	10,088,698	2,288,951	3,394,194	3,230,733	3,857,664	5,923,430	6,857,965
Houston Oil Company	792,831	1,025,458	1,153,840	111,600	348,300	325,507	681,231	677,158	828,333
Lion Oil Refining Company	629,052	1,408,405	1,644,059	188,715	845,043	986,435	440,337	563,362	657,624
Ohio Oil Company	5,904,038	8,486,393	9,776,951	1,127,223	2,643,199	3,344,425	4,776,815	5,843,194	6,432,526
Panhandle Producing & Refining Company	93,813	68,125	209,031	3,980	19,809	28,000	89,833	48,316	181,031
Phillips Petroleum Company	10,414,715	9,956,419	13,615,314	2,178,035	3,225,000	6,270,000	8,236,680	6,731,419	7,345,314
Quaker State Oil Refining Corporation	1,378,320	2,175,309	2,432,467	461,474	1,494,015	1,830,475	916,846	681,294	601,992
Sinclair Oil Corporation	4,671,941	14,423,448	14,536,952	1,200,000	6,000,000	5,000,000	3,471,941	8,423,448	9,536,952
Skelly Oil Company	3,537,746	4,611,469	4,885,875	868,000	2,403,000	2,319,200	2,669,746	2,208,469	2,566,675
Standard Oil Company of California	15,202,067	18,696,036	24,236,633	2,432,000	5,372,000	9,100,000	12,770,067	13,324,036	15,136,633
Standard Oil Company of Indiana	28,590,786	34,906,884	42,685,558	6,827,652	15,516,358	20,806,140	21,763,134	19,390,526	22,079,418
Standard Oil Company of Ohio	6,158,812	9,150,316	6,773,630	3,616,500	6,212,000	4,434,900	2,542,312	2,938,316	2,338,730
Texas Pacific Coal & Oil Company	469,505	461,899	554,951	0	55,000	65,000	469,505	406,899	489,951
Union Oil Company of California	4,376,645	3,809,769	4,184,563	1,200,750	950,000	1,100,000	3,175,895	2,859,769	3,084,563
Total 15 companies	$ 95,462,986	$117,336,304	$141,479,519	$24,537,980	$48,893,618	$60,650,715	$70,925,006	$68,442,686	$80,828,804

* Loss. † Due to certain subsidiaries operating at a profit.

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Preheating Desirable When Welding Heavy Carbon Steel Sections

INCREASING repair of heavy equipment through welding, due to inability of users to secure replacement parts for broken or worn-out units, is throwing increased responsibility on the men entrusted with the repair work, for upon the success of their efforts frequently depends the maintenance of urgently required production or pumping schedules.

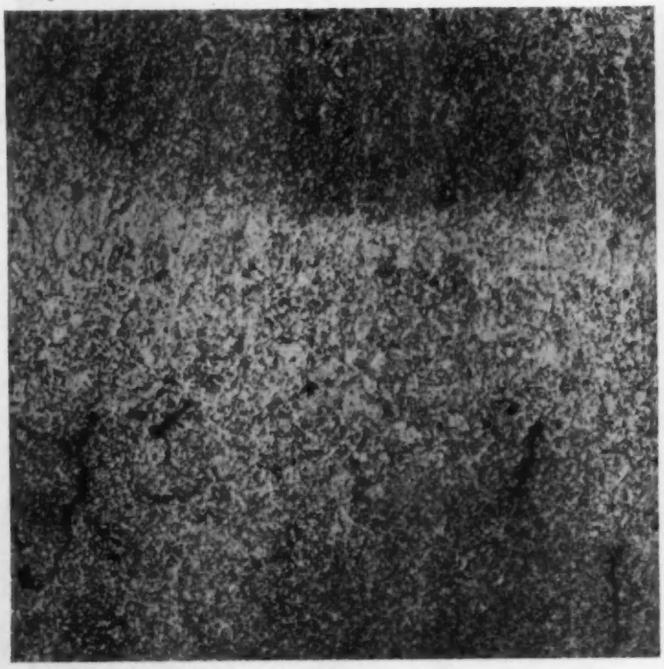
One of the precautions all to often disregarded in the rush to get the job done is that of preheating thick steel sections before welding them. Where the welding heat can penetrate through the metal and equalize temperature conditions, this extra work is not required, but when the section exceeds three times the diameter of the welding rods to be used—this figure is not exact but may be used for a quick check—it can not hurt and frequently will assist in making a satisfactory repair if the metal surfaces to be joined be heated previous to the welding operation. It is not necessary, as some operators think, to bring the adjacent metal up to a red, or even a "hot-black" condition to equalize conditions within the metal after the junction is complete.

Close control of the heating and even distribution is of more importance than high temperatures, an increase to around 200° F., being found to assist greatly in the distribution of internal stresses after the weld is completed.

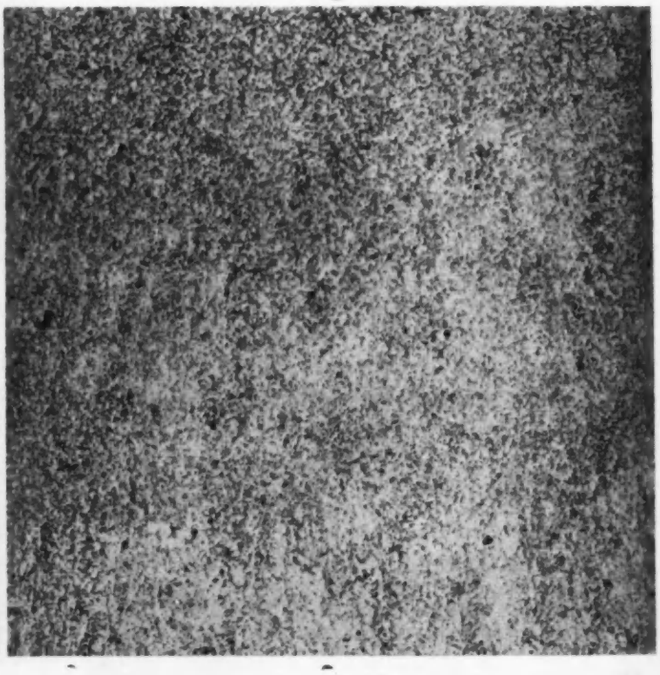
Preheating may be done with a gas torch, muffle, or by building a temporary enclosure around the parts to be joined, and heating with any available means so long as the heating does not deposit a coating which will interfere with or nullify the welding operation.

On many large repair jobs—done now only because it is impossible to replace the broken units—it is not sufficient to preheat before the start of the welding operation, it is advisable to maintain the condition during the welding operation. Although it sometimes happens that the welding itself supplies sufficient heat to maintain this desired elevated temperature, in many instances the thickness of the section being repaired, and the consequent bulk of relatively cold metal behind it, makes the supplying of additional heat necessary at times during the course of the repair.

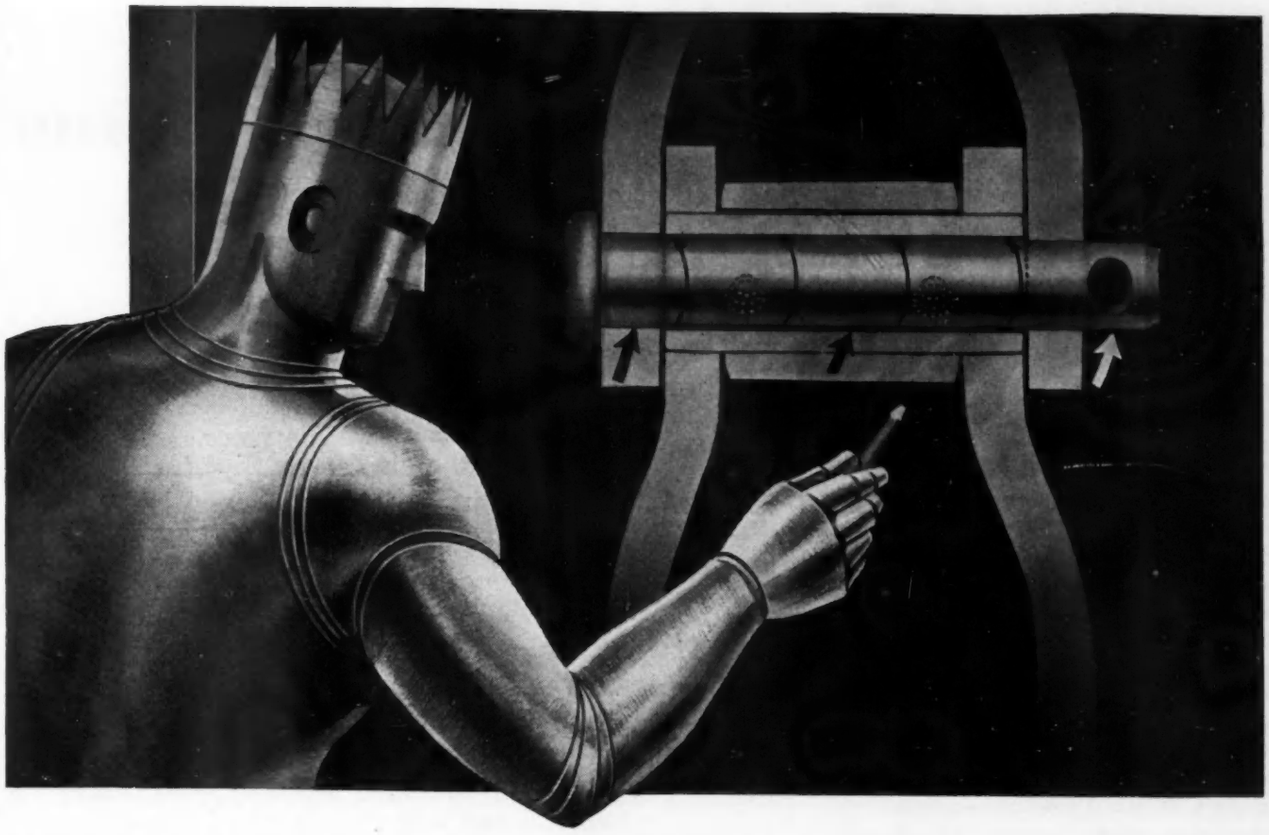
With so much depending upon rebuilt equipment, any precaution which will help to insure continuity of operation is itself a contribution to the oil industry's war effort, and the added service life so gained justifies the extra care and labor expended.



This photomicrograph shows a cross-section through welded sections of plain carbon steel (0.20 carbon, 0.65 manganese) 1½ inches thick, welded with ¼-inch rod. The micro-cracks shown near the base of the section developed after welding without preheat, and might easily cause failure in service.



This homogenous structure is of steel similar to that at the left, welded after being preheated to 200° F. The temperature was indicator-controlled and additional heat supplied when it was apparent that the temperature had dropped below that desired. Additional heat was added and welding renewed.—Photomicrographs courtesy Tempil Corporation.



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makes Chain hook-up easy

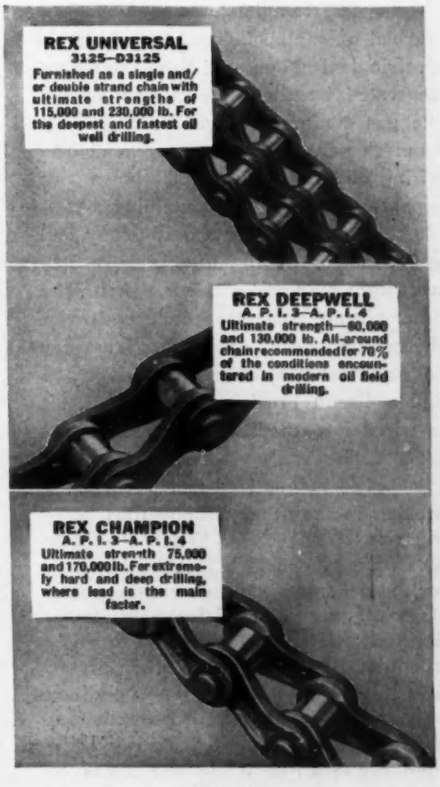
Making new chain hook-ups and replacing links in the field are easy jobs with Rex Oil Field Chains. For, in designing his Oil Field Chain, Rex Mechanical Engineering—Rex M. E.—added a feature—the famous three-diameter pin.

With this pin, the chain can be disassembled in the field without heavy battering of sledges or drift pins—ending the danger of smashed hands and skinned knuckles. The pin is a drive fit but only for a distance equal to the side-bar thickness—a pin easy to drive in and easy to drive out, but that stays put.

And another important feature: removal of links does not necessarily end their usefulness. They can be reused—for they are free from the enlarged holes and loss of "fit" common when drifting and long pin drives are necessary.

Rex M. E.'s Oil Field Chains have other important advantages, too! Their balanced design reduces weight and prolongs chain life. Precision-made pins, bushings, rollers and side bars are assembled into the Rex Unit Link by powerful, carefully controlled presses to assure heavy force fits at every point. Exclusive oiling system assures effective lubrication.

Rex Oil Field Chains and other Rex products are stocked at your supply store with territorial men ready to serve you in every oil field. See them or write Chain Belt Co., 1639 W. Bruce St., Milwaukee 4, Wis.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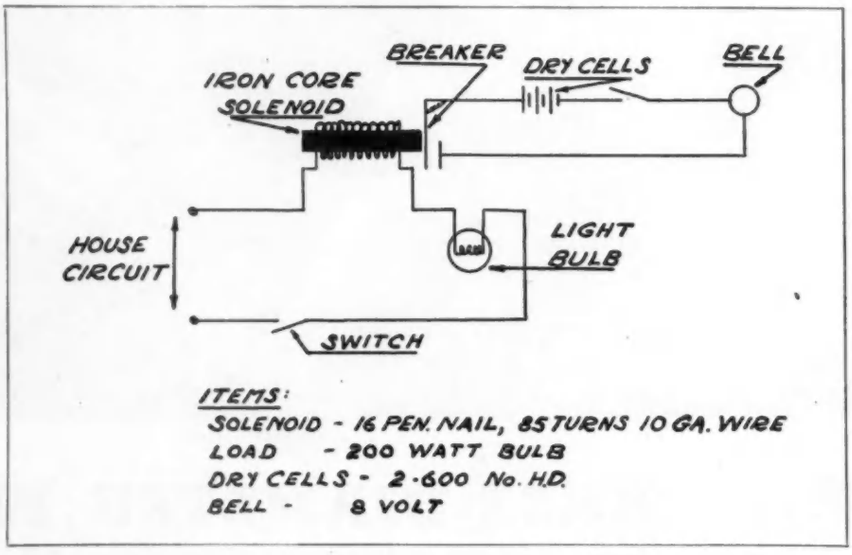
Automatic "Sleep Wrecker" Warns of Engine Trouble

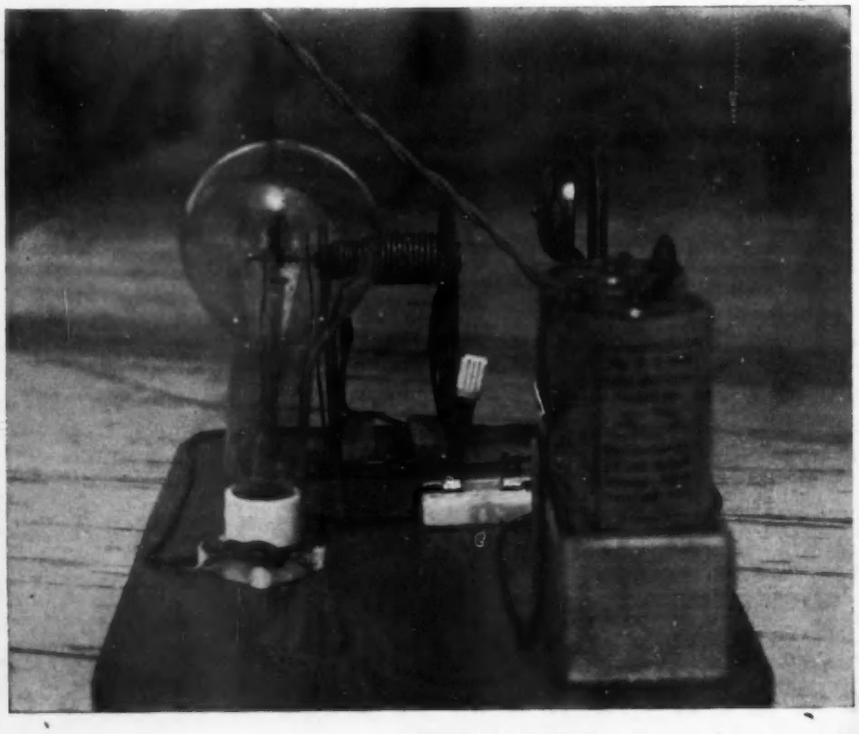
OCCASIONALLY, gas compressor engine drives go haywire without notice. The quality of the fuel gas may change or some unusual peak load may be placed on the system to cause the engine to stop. When this occurs in the compressor plant, which is the heart of the production system using gas-lift devices, it is not long before the dependent wells fail to operate for lack of sufficient gas pressure. This usually occurs in the middle of the night. The plant itself is subjected to strain under these conditions and often some damage occurs, such as oil from the engine or compressor being sprayed over the plant. The electric generating system for the lease may be connected to the same drive, thus this also goes out when the engine dies.

In order that the lease man may be warned of engine failure, a very simple electric device, operated from the circuit generated by the same engine driving the gas compressor, can be rigged up from elemental electric equipment. The wiring diagram illustrated shows two separate circuits: one containing a simple solenoid made from a 16-penny nail and 85 turns of 10-gauge wire, a 200-watt light bulb and a safety switch. The other circuit, completely independent of the original, derives its power from dry cells and contains an ordinary door bell and a circuit breaker. The first circuit is wired into the lease generating system. While the system operates, the solenoid is magnatized and attracts the breaker in the other circuit—thus keeping this circuit open. When the compressor engine, which is also the drive for the generator, goes down, the power shuts off, the solenoid loses its attraction and the spring forces the breaker to contact the point in the other circuit, thus closing this circuit. The bell then rings, thus warning the lease man that the compressor is down. This is a Rube Goldberg idea that works and has saved production from downtime and prevented plant damage by timely warning.



Above: The wiring diagram shows the simple arrangements involved. The light bulb is placed in the circuit to provide "load"—a requisite for proper functioning of the solenoid.

Below: The two complete circuits of the "Sleep Wrecker" are placed approximately 24 x 18 inches. The actual electrical units required in the various members were determined by trial and error methods.



☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

GLOBAL oil matters overshadowed the domestic situation in Washington last week, as the surrender of Italy made the Mediterranean an Allied sea and tied in other phases of the foreign situation which included:

Possible easing of the Venezuelan and East Coast situation by permitting the movement of oil from the Middle East to England;

Discussion in PAW of a world oil pool to ease the strain on the United States;

A flat warning to Argentina by Secretary of State Hull that she would get no oil machinery or equipment or anything else so long as her "benevolent neutrality" ties her to the Axis.

Progress in negotiations for United States financing of Mexican production and refining;

Petroleum Reserves Corporation apparently prepares for active participation in world oil development.

Details of the proposed "world oil pool" and PRC operations were shrouded in secrecy, and officials also refused to discuss the possibilities of bringing more oil into the country from Venezuela, although it was admitted that the opening of the Mediterranean and the improvement in the tanker situation were important developments.

Argentina, accused both of harboring Axis agents and of being selfish in the disposition of her oil, was sharply rebuked by Hull in a response to a request for machinery and equipment for petroleum production and arms to put her on a "parity" with other Latin American countries, and was told bluntly of Washington's suspicion of her attitude toward our enemies.

Oil Thinking in Washington Swings to Global Needs

Hull Cold to Argentina's Call for Oil Field Supplies

WPB Appreciation of Oil Means More Steel for Drilling

Disposition of Elk Hills Now Up to Congress

By B. F. LINZ
Washington Correspondent

☆ ☆ ☆ ☆

On the domestic front, the outstanding development of the week was a White House announcement of dissolution of the Standard Oil Company of California-Navy contract for development of Elk Hills and the strong indication that the ultimate decision on disposition of the Naval Reserve would be left largely to Congress.

Under an agreement for cancellation of the contract, the company is to maintain limited operation of the field for 90 days, within which period it is possible permanent arrangements may be made for wartime production of oil which soon may be urgently needed for the Pacific war.

United States May Advance Mexico Fifty Million Dollars for Oil Development

Plans for a United States financed development of Mexican production and refining estimated to cost anywhere up to $50,000,000 are rapidly approaching perfection, it was disclosed by Ickes September 9.

Plans and specifications for a 100-octane refinery at Mexico City, to be financed by the Export-Import Bank and built by Pemex, a Mexican government corporation, are nearing completion, and it is expected top officials of the company will come to Washington in the near future to complete arrangements for the deal, he said.

Together with the refinery, it is planned to undertake a major increase in Mexican crude production, and E. DeGolyer, active head of Petroleum Reserves Corporation, now is in Mexico surveying the situation.

Activities of PRC itself, however, continue clothed in secrecy, and Ickes refused to discuss its plans other than to say that he undoubtedly would make use of all the very broad powers granted the corporation in its charter.

Another phase of the foreign situation is understood to be under active study in PAW, where a directive is being prepared to set up a world pool of oil. Both Ickes and Davies admitted that the matter is a live one and that there may have been discussions of it with the Department of Justice, but declared no direcitve has yet been submitted for approval.

Argentina to Get No Pipe So Long as Axis Entangled

The United States government has no intention of providing Argentina with either tubular goods for production or material for refining unless and until that country breaks definitely with the Axis, it was made clear by the State Department September 7.

Releasing an exchange of letters between Vice Admiral Segundo Storni, Argentine Minister of Foreign Affairs, and Secretary of State Cordell Hull, the department disclosed that professions of "benevolent" neutrality by the revolutionary government set up in Argentina last June have been received with reserve and are considered not to have been followed by actions which would bring the country within the community of American republics.

In his letter, protesting that to break with the Axis now would give the impression that such action was taken "under the pressure or threat of foreign agents," Storni urged that President Roosevelt "make a gesture of genuine friendship toward our people" in the form of provision of military equipment and machinery to place Argentina on a parity with other Latin American countries.

Storni stressed the aid his country has given the United States, and complained that "petroleum production has decreased because of the deterioration of the equipment, and our reserves have diminished considerably."

"Today," he said, "in order to compensate for this shortage, we find it necessary to burn in the boilers of factories and plants millions of quintals of corn, wheat and linseed. With the aid of the United States, Argentina could burn its own petroleum, keeping that wealth of grain to supply the Allied nations and to form a reserve stock that would make it possible to feed the European peoples threatened with hunger."

In his response, Hull rejected the claim of pressure on Argentina to break with the Axis, pointing out that the country had freely entered into commitments, together with the other American republics at the Rio de Janeiro hemisphere defense conference, charged that Argentina has harbored Axis spies and informers, and went into details regarding the oil situation.

"With regard to the petroleum negotiations," Hull said, "it may be pointed out that Argentina, thanks to its natural resources, the production of which has increased during the war period, and to its ability to import, has enjoyed during the past year and a half far greater oil supplies for the consumption of its civilian population than have the neighboring republics. Those republics have received extremely limited supplies made possible through cooperative action in which the Government of the United States and of the producing republics other than Argentina have participated. Considerable hardship and sacrifice has resulted owing to the serious shortage of ocean-going tankers. Thus, while the Argentine people were enjoying gasoline supplies equivalent to about 70 percent of their normal civilian requirements, the peoples of Uruguay, Brazil, Paraguay, Chile and, in general, other republics were receiving only approximately 40 percent of normal civilian requirements. Argentine assistance would have been of great value during this very difficult period.

"The negotiations to which your letter refers have ben concerned with the provision of materials and supplies to enable the future production of the Argentine oil fields to be maintained and

even to be increased. The lack of these materials has not in any way affected the ability of Argentina to cooperate with the neighboring republics during the past 18 months if Argentina had desired to cooperate.

Italy's Surrender Will Increase Use of Oil

Italy's surrender will result in an increase rather than a diminution in military oil demand, the country was warned by Ickes in an apparent attempt to head off agitation for relaxation of rationing on the ground that the end of the war is in sight.

"Contrary to what some may think or hope," Ickes said, "the capitulation of Italy will not mean any lessening of the military demand for gasoline and other petroleum products. Quite the opposite, those requirements will grow and grow in the weeks and months ahead for, in forcing Italy out of the war, we have but opened the door to a wider and much vaster scale of military operations against Nazi Germany. Those operations will require many millions of barrels of gasoline and other petroleum fuels, huge quantities of which must come from a single supply source—the United States. "Therefore, I can only emphasize once more what I have emphasized and re-emphasized so many times in the past: oil is so vital, so precious in this war, that we here at home must save every single gallon that we possibly can. Failure to do so can unnecessarily prolong the winning of the war, and result in the unnecessary loss of American lives."

Ickes agreed that the opening of the Mediterranean will allow the movement of oil from the Middle East to England, taking some of the pressure off South America, but refused to speculate whether that would result in more Venezuelan oil being brought to our own East Coast. He refused to answer any questions about imports from Venezuela, however, although Bureau of Mines figures show that stocks of imported oil have increased materially in recent weeks.

It is not only too early to speculate on the effects of the eased Mediterranean situation, Ickes said, but much depends on the tanker situation and the widening of the war area. Tanker movements to the East Coast are increasing, he said, but "it isn't safe to predict in this game."

We Now Must Burn Oil To Save Coal for Italy

PAW's conversion program, recently contracted from an all-over conversion of home and industrial plants to the shifting only of industrial establishments using more than 10,000 gallons of oil only, may have to be entirely abandoned as a result of Italy's surrender.

Large quantities of coal will have to be shipped from the United States to Italy for use by the Army in keeping utilities and railroads going in the occupied area, Ickes said September 9, resulting in a further tightening of the already serious domestic situation.

Italy, entirely without coal resources, has been getting the fuel from the Ruhr, but now will have to look to the United States, England and South Africa for supplies. Shipments already are moving from this country, Ickes said.

Increased Proportion of Nation's Steel Capacity Allotted to Oil Industry

Although the amount of steel available for distribution by WPB among the claimant agencies and the quantities requested by these agencies has not changed appreciably from the third quarter, WPB representatives are beginning to appreciate the importance of the petroleum industry and to recognize its needs for materials. Consequently, the industry is being allotted a larger proportion of the nation's steel capacity. This has caused PAW officials to take a more optimistic viewpoint about the general materials situation for the producing and exploratory branches of the industry, and was disclosed at the pre-council meeting of the PIWC production committee.

A report by Don R. Knowlton, PAW director of production, revealed that PAW's request for materials in the fourth quarter of the year was cut about 10 percent, but that WPB agreed that when certain contingent projects were approved, for which additional amounts will be granted, that the actual reduction would be about 3½ percent. "If this trend continues," Knowlton declared, "it may be well that the near future will see further relaxation of PAO-11. As a matter of fact, we are presently engaged in field-by-field analysis to determine the information on which such relaxation may be based."

Ample tubular material is now available for all operations if all operators apply for no more material than they believe they will require, and then place delivery orders for the full allotments, according to Frank A. Watts, PAW director of materials (The Oil Weekly, September 6). Watts disclosed that for the fourth quarter of this year, 280,000 tons of carbon steel and 30,000 tons of alloy steel were allotted to PAW for reallotment to production operators.

Deliveries of seismic cables are not expected to be delayed as much in the future, and aluminum requirements for geophysical instruments is easier, according to William B. Heroy, PAW director of reserves.

Quantities of controlled materials for the fabrication of drilling and production machinery and equipment were allotted in substantially the same proportions, Knowlton said. All fourth quarter CMP-4B applications from manufacturers so far received have been processed and steel has been available to supply them with practically all they requested. "It is our opinion that in no instance has a manufacturer been cut where it would in any way seem to hazard or jeopardize drilling and production operations," he said.

Knowlton also advised the committee that distribution of 37,000 tons of oil-country tubular goods originally earmarked for export, halted some 90 days ago by the Lend-Lease Administration, has again been resumed, and a listing of the amounts, sizes, weights and grades has been sent to the district offices.

Some of this material, he explained, is not of the sizes, weights and grades commonly used by domestic production operators, and arrangements have been made whereby this odd pipe can be sold to operators at prevailing prices of the sizes, weights and grades which they commonly use, so that no operator will suffer additional expense.

Only about 30,000 tons of material will be distributed, PAW having refused to accept the responsibility for the distribution of some 7,000 tons of 6⅝- and 5 9/16-inch drill pipe, domestically little used.

Secondary Recovery

Knowlton reported that chairmen of secondary recovery sub-committees have been named for all five districts and were to meet in St. Louis September 9 to plan quick prosecution of the national survey of secondary-recovery possibilities. Chairmen of the subcommittees are: District 1, George W. Holbrook, Bradley Producing Corporation, Wellsville, New York; District 2, C. P. Dimit, vice president of Phillips Petroleum Company, Bartlesville, Okla.; District 3, C. P. McGaha, president of the National Stripper Well Association, Wichita Falls, Texas; District 4, N. A. Slagter, Lance Creek Engineering Association, Lance Creek, Wyoming; District 5, A. C. Rubel, vice president of Union Oil Company, Los Angeles.

Watts announced that 60,000 tons of casing, tubing and drill pipe will be delivered from mill stocks during the fourth quarter and that 15,000 tons of these items can be obtained from field stocks.

"Advance planning and reasonable cooperation on the part of production operators, the equipment manufacturers, the oil field supply companies, the pipe mills and other producers of controlled materials, and PAW," he reassured the committee, "should guarantee an adequate supply of all materials for all authorized production operations. The possible exceptions to this statement are items of material normally acquired through distributors, such as internal combustion engines."

It is no longer necessary for production operators to maintain inventories at the relatively high level they reached during the past two years, he said.

Geophysical Equipment

Estimated requirements of critical component parts for geophysical equipment, such as vacuum tubes, capacitors, resistors, etc., for the first quarter of 1944 have been compiled and submitted to WPB, it was reported by W. B. Heroy, WPB director of reserves.

In a review of the situation, Heroy disclosed that a study of the requirements of operating companies for electric cables and wires used in seismic field work showed that they have, in effect, standardized cables by using only two types almost universally, and as the rate of cable production for the Army and Navy has been reduced at manufacturing plants, deliveries of seismic cables are not now expected to be

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subject to such delay as formerly and the situation has become less critical.

Information has been furnished WPB on aluminum requirements for geophysical equipment, and as the aluminum supply situation is easier all the aluminum necessary for the manufacture of precision instruments of all kinds used in petroleum exploration will be allotted.

Heroy also called attention to two tax matters of importance to the production branch.

Tax Change

"The Treasury Department on June 25, 1943, approved an amendment to the income tax regulations which relates to the provisions with reference to charges to capital and expense in the case of oil and gas wells," he explained. (THE OIL WEEKLY, July 5). "It would appear, as a result of these changes, that an operator who exercised his option to expense such costs may now include the cost of wells drilled under turnkey contracts. A further change in the language of the regulations would also probably permit the operator who drilled an obligatory well to exercise his option to capitalize or expense his cost. These changes in the regulations would accordingly appear to be favorable to many operators in the oil industry, and especially to those drilling exploratory wells for an interest in the property.

"The proposal of the Commissioner of Internal Revenue to modify the procedure of the bureau so as to require, in certain cases, the capitalization of geological and geophysical expenses has been given close study by this division and a full report on the subject was transmitted to the Bureau of Internal Revenue in July. More recently the petroleum administrator called the attention of the Secretary of the Treasury to the matter and urged that a policy be established as soon as possible in order that operators might be relieved of anxiety."

The committee discussed a tentative OPA interpretation of Regulation 230 as applied to the sale and transfer of pipe in the ground, and adopted a resolution agreeing with a provision that a seller may obtain the ceiling price for re-usable pipe, less the cost of lifting, reconditioning and loading on cars and trucks, but urging the elimination of an alternative ceiling of $35 per net ton, where the seller is unwilling or unable to establish the cost of lifting, reconditioning and loading.

The provision as written by OPA, it was pointed out, confuses the interpretation of the order, virtually placing two ceiling prices on pipe in the ground and making trading between operators difficult. It will work to lessen free trading and salvage of pipe in the ground, it was held, and would play into the hands of second-hand pipe dealers and brokers.

Complaints against the so-called "victory" steels which are being used for sucker rods and rock bits were also brought before the committee, which adopted a resolution asking PAW to take the matter up with WPB to determine when and to what extent the war program and the present situation regarding the availability of alloy steel will permit the industry to return to the use of prewar standard steels for those products.

While it was admitted that the "victory" steels are the best available substitutes for the specialized steels formerly used, it was pointed out that they cannot render the same maximum service and through the use of a small amount of the proper alloy in steels for sucker rods and rock bits a direct saving of material, critical materials, machinery and manpower might be achieved.

Hardwicke Appointed PAW Special Counsel

Appointment of Robert E. Hardwicke of Fort Worth as special counsel on state regulatory matters was announced September 10 by PAW.

Hardwicke, recognized as one of the nation's outstanding experts on state petroleum regulatory activities and from 1930 to 1934 assistant to the Attorney General of Texas in connection with the state conservation law, will act as liaison between PAW and the Interstate Compact Commission and the regulatory bodies of the several producing states. He will have headquarters at Houston.

Agreement Ends Elk Hills Contract; Disposition of Reserve Up to Congress

Department of Justice disapproval and Congressional investigation of the Navy-Standard Oil Company of California contract for development of the Elk Hills Naval Reserve culminated September 8 in an announcement from the White House that President Roosevelt has approved an agreement terminating the contract and that no new contract would be made until Congressional interests have had an opportunity to express their views.

The terms of the agreement abrogating the arrangements entered into between the government and the company last November were approved by Attorney General Francis Biddle and Secretary of the Interior Harold L. Ickes before they went to the President.

It is provided that limited operation and sharing of oil shall continue for another 90 days, but further drainage from government lands is to be halted after that period.

The agreement was developed in three months of negotiation entered into after the Navy announced the contract would be terminated as a result of disclosures by the Department of Justice and the House public lands committee that it was not authorized by law.

Under the oil-sharing arrangement, whereby the Navy was to receive 64 percent and the company 36 percent of the field's production, the government will get the benefit of the division although, it was said, about two thirds of the oil produced since last November has come from the company's lands.

The company is to conduct limited operation of the field for three months under a joint operating committee, with the Secretary of the Navy having the final word in event of a disagreement.

During that period, the Navy and the company will "explore the possibilities of a permanent arrangement for operation of their respective lands as a unit," but the Navy will remain free to adopt other methods for dealing with the reserve. No new wells are to be drilled on any part of the reserve without Navy approval.

"The question of what ultimately should be done about the Elk Hills reserve is being explored in the Navy and in Congressional committees," the White House statement said, "and the Secretary of the Navy has advised the President that he does not desire to make any final recommendations until Congress reconvenes and the opinions of all interested parties are obtained."

Funds expended by Standard Oil Company of California in improving the Navy's lands, estimated at about $500,000, will be reimbursed in cash, subject to a Congressional appropriation.

Declaring that the company will continue to cooperate with the government "in the same good faith" which characterized the negotiation of the November contract, H. D. Collier, its president, said following the White House announcement that operation of the properties would be conducted on an actual cost basis during the 90-day period.

Summarizing the negotiations which led to adoption of the contract and the events leading up to its abrogation, Collier emphasized that "three cabinet officers, and others, have emphasized that the action was taken purely on technical legal grounds—and for no other reason."

"It now becomes necessary to work out other arrangements," he said. "Since Standard of California's oil properties in the Elk Hills were there before the government's naval reserve was formed, Standard is an essential unit in any program that is evolved. We are entering this new phase in the same good faith which characterized our earlier efforts to cooperate in the Navy Department's policies.

"Standard of California has agreed, pending further negotiations during the 90-day period provided for in the temporary arrangement, to operate Navy's wells on an actual cost basis. Such operations will assure that the oil which can be produced from the wells in the Elk Hills field will continue to be available for the war effort."

Vinson Asks for More Data on Price Situation

Discussing the price phase of the oil situation, Ickes indicated that no progress has been made toward securing an increase but disclosed that stabilization Director Fred Vinson, who is making a study of oil prices, had asked for additional information from PAW which had been furnished.

Eastern Gasoline Supply Not Improved

Motorists in the East, entrusted with the responsibility of policing their own non-essential driving following the lifting of the ban on pleasure motoring September 1, appear on the whole to have adopted a policy of lenity in sharp contrast with former rigorous enforcement by OPA.

Early reports from various sections of the area indicated an increase of 30 percent or more in the number of cars on the highways, although traffic officers in the larger cities expressed the belief that the traffic volume had not increased materially.

The initial surveys came simultaneously with a report by the Public Roads Administration that traffic on rural highways throughout the rationed area showed greater percentage decline from prewar levels in July than in any previous month this year.

In the East, PRA said, the traffic volume was 62 percent under prewar, while in the rest of the rationed area it was down 45 percent. On a nation-wide basis, July traffic was 52 percent less than in the same month in 1941, it was computed from traffic counts taken in 43 states.

July motor-fuel tax collections, which totaled $30,844,000 in 27 states, averaged 47 percent less in seven eastern states and 22 percent less in 20 western states than in July, 1941, it was stated.

At a press conference September 9, Ickes admitted the consumption has not been brought down to allocation levels in either Districts 1, 2 or 3 and added that the stock situation in the East has not improved to the point where ration coupon values could be increased. Indicating that the current allocation of 342,000 barrels daily for District 1 may be continued unchanged for some time to come.

"As we see the thing from here, we can't increase rations now," he said.

The weekly PAW report showed a further increase in East Coast stocks, principally in home heating oils, to 40.3 percent of normal, the best showing in a long period but still 18.8 percent below inventories this time a year ago.

Report Shows 80 Tankers Delivered This Year

Eighty tankers aggregationg 1,325,500 deadweight tons were delivered during the first 7 months of this year, compared to 62 tankers totaling 998,200 deadweight tons produced in 1942, it was disclosed by the Office of War Information September 9, in a review of our war production of merchant shipping.

The principal designs under the wartime standardization program which has been adopted to speed construction are for the T2 and T3 type tankers—vessels of 16,600 deadweight tons, with a capacity of 135,000 barrels.

Present schedules call for concentration largely on the Type T2 carrier, 80 of which were delivered through July with 424 more to be produced by the end of 1944 together with 87 Type T3. When this program is completed, it will mark the production of a total of 661 tankers since Pearl Harbor.

The tanker production program, OWI said, is being rounded out by the conversion of 102 Liberty ships into oil carriers. These vessels, after reinforcement of bulkheads, installation of extra ventilation systems, addition of piping and pumping equipment and other alterations, will serve as tankers with a capacity of 65,000 to 70,000 barrels each.

The program for the current year calls for the delivery of 266 tankers with a deadweight tonnage of 3,996,000, all with speeds greater than "fleet speed."

Highlighting the differences between this war and the last, OWI pointed out that in 1917-18 we concentrated on the Western Front while today we are fighting on five continents, and in the last war our allies provided us with much material whereas currently we are not only equipping ourselves but also, in part, the United Nations.

An armored division in action and on the move uses 650 tons of gasoline a day; the fuel for Eisenhower's tanks weighs more than the bales of hay for Pershing's horses.

Smart, Arkansas, Field Gets Price Increase

A 10-cent increase in the ceiling price of Smart Field (Arkansas), crude oil was authorized last week by OPA in another of its individual adjustments, providing a new maximum price at the receiving tank of $1.18 per barrel for oil of 40° API gravity and above.

With approximately 50 wells in the field, with an output of 85,000 barrels monthly, all purchasers have agreed to absorb the increase in price, "so that the action will have no effect on the cost of living."

OPA explained that during the base period in October, 1941, the Smart field was in its infancy, with only four wells. Producers then sold their oil on the basis of the common stream of a refinery located near the field, which was classified as a sour crude. Since that time additional market outlets have been made and transportation facilities improved, and OPA found that the quality of the oil justified the increase.

Improved Oil Movement Cited in Barge Curtailment

Construction of 36 of the 305 wooden oil barges planned by the Office of Defense Transportation at the height of the East Coast pinch was halted by ODT September 9 because of the improvement in facilities for the movement of oil.

"Facilities and equipment available for the transportation of petroleum and petroleum products, particularly to the East, are still expanding, as new pipe lines, some additional tank trucks, and the barges under construction come into use and as the rail movement is improved with experience," ODT Director Eastman said.

"We are approaching a time when our rail, water and pipe-line facilities and equipment will be adequate to transport all the petroleum products which may be expected to become available for movement."

Elimination of the 36 barges, not yet put under construction, will conserve materials and manpower, he pointed out.

Filling Station Manpower Situation to Be Acute

A serious manpower situation in the marketing branch of the industry this winter is foreseen by officials in Washington, and the ODT is urging oil distributors in labor-shortage areas to take the necessary steps to have their activities declared "locally needed" by WMC.

To be eligible for this classification, distributors must conform with operating standards set up by ODT, WMC and PAW, which in general require compliance with ODT and PAW conservation orders on distribution.

Applications should be filed by operators in an area as a group, it was suggested. They should go to the local WMC director, who will refer them to the ODT and PAW district offices which, in turn, will confer with their advisory committees to determine whether the distributors are conforming with the established operating standards. If they are, officials said, by ODT and PAW will support the applications.

Designation as "locally needed" will gain for the distributors the assistance of WMC in recruiting, training and program stabilization, but does not carry with it the specific draft deferment granted industries classified as essential. However, local draft boards are given the authority to defer men in locally needed activities.

Insurance Reductions Reflect Lessened Sub Menace

Further reductions in war risk insurance rates on tanker cargoes covered by open cargo policies of the War Shipping Administration were placed in effect last week by WSA.

Indicating the extent to which the submarine menace has ben curbed, a horizontal slash of 20 percent has been made in the rate from United States Atlantic ports to destinations in the Caribbean region; the rate on shipments from the Atlantic and Gulf Coasts to South and East Africa, the Red Sea, Alexandria, the Persian Gulf and some Indian ports was reduced from $8.25 to $8, and rates from the Gulf to the East Coast of Central America and the north coast of South America as far as Trinidad were halved from $3 to $1.50.

Houston Societies Will Hear Wilde on Rubber

Dr. H. D. Wilde, Humble Oil & Refining Company, will discuss "Chemistry of Synthetic Rubber" before a joint meeting of the Gulf Coast Section of the American Institute of Mining and Metallurgy and the Southeast Texas Section of American Chemical Society, at the Houston Club, Houston, September 14. The meeting will be preceded by a dinner starting at 6 o'clock.

Dr. Wilde's talk will be illustrated with a sound and color movie entitled "Bouncing Molecules."

In a sound movie "Petroleum at War," produced by Magnolia Petroleum Company, will be shown. This movie illustrates the part various branches and workers of the industry are playing in producing essential petroleum products.

Thompson Says East Texas Pressure Well In Hand

"The East Texas field was 13 years old September 5. This field has produced one billion seven hundred million barrels of oil. It can probably be said without fear of contradiction that the performance of the East Texas oil field is the best example of bottom-hole pressure control that has ever been known anywhere in any oil field where the property was owned and developed by many persons," Ernest O. Thompson of the Texas Railroad Commission said in a statement September 9.

"I mean by this that there may be better records of pressure control in some fields owned entirely by one company and developed and operated by that company, or in fields that are operated under a unit-management plan and operated by one operator as though it were his own.

"Lately there have been some expressions of apprehensions and fear that the pressure drops in the East Texas field indicate a strain of heavier withdrawal. These fears are proven by the figures given below to be without foundation.

Water Injection Helping

"In the East Texas oil field the Texas Railroad Commission first provided by order, a bonus in the form of a reward of 1 barrel additional oil allowable to the operator for each 50 barrels of salt water returned to the reservoir. This premium for good conservation and preservation for bottom-hole pressure by the reinjection of salt water is open to every operator for returning his water from his wells, or for returning the water produced from wells of his neighborhood or others and it is always open to groups of operators working together in a cooperative reinjection program, or it is possible for the operator to turn his salt water over to the salt-water-injection company which was established at the suggestion and under the direction of the Railroad Commission of Texas for the purpose of making a business out of the injection of salt water to maintain the bottom-hole pressure in the East Texas field.

"The purpose of reinjecting the salt water is to prevent a decline in pressure so as to keep the gas in solution in the oil and thereby insure great ultimate recovery of oil from the fields.

"It is remarkable to note that more than 16,000 of the 26,000 oil wells in the field are still flowing naturally by the force of nature even after 13 years of prolific oil production.

"The total water injected already in the East Texas oil field is considerably over 35 million barrels which shows that the program is a successful one. As indication of progressive success of this program, it is interesting to note that the East Texas Salt Water Disposal Company in January, 1943 was reinjecting 22,911 barrels per day; February, 42,007 barrels; March, 56,000 barrels; April, 56,247 barrels; May, 94,500 barrels; June, 104,000 barrels, and July, 115,000 barrels.

"They and other operators are constantly injecting more and more water. The total percent of water injected last October was 23 percent, whereas now the water returned to the sand is around 70 percent, and as fast as materials are available and additional input wells can be completed, more and more salt water will be returned to the producing horizon until we shall have arrived at the point where practically all the salt water will be returned to the sand, and thus maintain the bottom-hole pressure.

"During 1941 the pressure dropped from 1051.73 to 1025.58—a loss of 26.15 pounds for a total allowable production of 131,694,138 barrels—0.9986 pounds per million barrels.

"During 1942 the pressure dropped from 1025.58 to 1015.71—a loss of 9.87 pounds for a total allowable production of 121,776,143 barrels—0.08105 pounds per million barrels.

"During 1943 the pressure has dropped from 1015.71 to 1012.22 on August 1, a loss of 3.49 pounds for a total allowable production of 71,492,657 barrels, or 0.04882 pounds per million barrels.

"Assuming present trend as shown by the average of the first eight months of 1943 to continue, 7.42 billion barrels could be produced mathematically before the pressure reaches 750 pounds. However, there is only about 3.00 billion left, so at this rate the pressure will never drop to 750 pounds with the present trend.

"The reduction of the water-oil ratio to only 5 barrels of net water allowed to be produced with each barrel of oil will effectively tend to maintain the above very favorable trend in bottom-hole-pressure reaction.

"For the last two months the commission staff in the East Texas oil field has been checking and testing the water-oil ratio on all wells making excessive water. A portable tank is taken right to the well and an actual test is made under the supervision of a commission employe to be certain that no more than 5 barrels of water is produced with each barrel of oil. More than 500 wells have already been tested, and the testing will continue until every well in the field has been tested and the water-oil ratio of 5 to 1 strictly observed. If a well is found to be producing net water in excess of 5 barrels of water to each barrel of oil, then the allowable for that well is corrected and tenders are issued only on the basis of his 5-to-1 water-oil ratio.

"I feel that we have this pressure control strictly in hand and that there need be no alarm on the part of anyone."

Thompson Again Urges Crude Price Increase

Immediate approval of the increase in the price of crude oil was urged again last week by Ernest Thompson, senior member of the Texas Railroad Commission, in a letter addressed to Fred Vinson, Director of the Office of Economic Stabilization. Vinson had written Thompson requesting a copy of the commission's new field allowable order and its crude-oil-availability report.

Along with those reports, Thompson sent a message urging Vinson to increase the price of crude oil 35 cents per barrel before a higher increase becomes necessary. In the course of the letter the commissioner said:

"I am more than ever convinced that a price increase should promptly be granted, and the 35-cent increase requested is daily becoming outmoded by the facts of continually increasing costs.

"I think we had better go ahead and give them the increase now, otherwise, it will have to be for a larger amount later.

"Public opinion seems to be in favor of having adequate gasoline rather than holding down the price, and we need not be caught short if we will promptly meet this basic need.

"It would be the best sort of protection to our country if you would allow this price increase now so that drillers can get busy this fall before winter sets in."

Texas Commission Hearings Set for Last Half of Month

The Texas Railroad Commission has scheduled several hearings through the remainder of September, most of which involve only one well and many of which are for dual completions or for salt water disposal. Among the most important hearings announced are:

September 14—Application of Cosden Petroleum Company for a new field allowable for W. R. Read 1, Section 48, Block 39, Township 1-N, T&P Survey, Howard County. Application of Sinclair Prairie Oil Company for a new field allowable for Emma F. Davis 1, Section 44, Block 30, Township 1-N, Howard County.

September 15—Monthly state-wide proration hearing.

September 16—The application of Spradling, McNatt & Clark for a new field allowable for their Taylor-Elliott 4 in Clay County. The request of Gulf Oil Corporation to change the gas-oil ratio rules in the Goldsmith field, Ector County, and in the Estes field, Ward County.

September 18—Application of M. & M. Production Company for a new field allowable for its Davis-Hall 1, Section 44, Block 30, T&P Survey, Howard County.

September 20—Application of Clay Johnson to revise the method of allocation in the Yates field, Pecos County. Application of Fullerton Oil Company for special rules in the Fullerton field, Andrews County.

Seeligson Meter Plan Opposed by Operators

The Texas Gulf Producing Company has asked the Texas Railroad Commission for permission to meter oil produced from the various horizons in the Seeligson field, Jim Wells County. The plan was offered as a substitute of the program in effect now which requires that the oil be put into separate tanks.

The applicants contended this would save a great deal of steel used to build the extra tanks. Other operators protested the plan, indicating they doubted the same results could be obtained by metering that are obtained by using separate tanks.

Compact Commission To Meet in New Mexico

Gasoline rationing, the productive capacity of Texas, the performance of the Hobbs field in New Mexico, the future of oil in California, and post-war use of natural gas will be featured subjects at the general sessions of the Interstate Oil Compact Commission, at the La Fonda Hotel, Santa Fe, New Mexico, September 24-25.

The commission's executive, legal, engineering, research and coordinating committees will be in session throughout Friday, September 24.

Refinery Runs Continue High and Result In Addition of Fuel Oils to Storage

Crude runs to stills continued in the week ended September 4 close to the 1943 record level of the previous week, and again it was possible to materially increase stocks of both light and heavy fuel oils, with production of gas oil and distillate higher, although there was a normal draft on stocks of gasoline.

United States crude runs to stills averaged 4,214,000 barrels daily in the week of September 4, down 13,000 barrels from the previous week, but 539,000 barrels, or 14.6 percent above the runs in the corresponding week last year. At the new rate, use was being made of 87 percent of refining capacity. Plants of the East Coast-Southwest used 88 percent of capacity, Appalachian District 1 used 78 percent and District 2, 113 percent, the Middle West 87 percent, Oklahoma-Kansas 81 percent, Rocky Mountain District 3, 100 percent, and District 4, 68 percent, and California 90 percent.

The addition to stocks of residual fuel oil was 425,000 barrels, bringing inventories to 67,675,000 barrels. That amount was 14 percent, or almost 11 million barrels lower, however, than the 78,602,000 barrels held on September 5 last year. The addition to heavy fuel stocks was accounted for almost wholly by the East Coast and Southwest, which added over half a million barrels.

Production of residual fuel oil continued close to the level of the week before, and the total of 8,703,000 barrels produced during the week was 24 percent more than the 7 million barrels turned out in the like week last year.

Stocks of gas oil and distillate fuel were increased 745,000 barrels in the week of September 4, to a total of 38,673,000 barrels, but that amount was almost 5 million barrels, or 11 percent, less than was on hand September 5 last year. This addition to storage occurred with production up only 10,000 barrels over the previous week. The output of 4,361,000 barrels was 301,000 barrels or 7.4 percent greater than that of 4,060,000 in the corresponding week last year. Nearly all districts added to stocks of gas oil and distillate fuel, but the major part of the week's gain was that of 661,000 barrels in the East Coast and Southwest districts. The latter area had larger production during the week, as did the Middle West, while other districts showed declines.

Stocks of finished and unfinished gasoline were reduced 1,123,000 barrels during the week, to a total of 71,402,000. That quantity was 7,691,000 barrels or nearly 10 percent less than in storage a year previously.

Production of gasoline was 77,000 barrels less than in the previous week, but it was 10 percent greater than the

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED	
	September 11	September 4
Arkansas	76,700	76,400
California	781,450	767,400
Long Beach	32,300	31,250
Midway-Sunset	57,000	54,900
Kettleman Hills	42,400	42,000
Wilmington	93,550	92,200
Rest of State	556,200	547,050
Colorado	6,850	7,250
Illinois	226,750	210,350
Salem	28,200	29,300
Louden	37,650	37,450
Other New Pools	149,550	132,550
Old Pools	11,350	11,050
Indiana	13,250	14,750
Kansas	290,450	263,300
Kentucky	21,200	22,850
Louisiana	361,050	355,800
North	82,300	82,050
South	278,750	273,750
Michigan	55,500	56,900
Mississippi	49,150	51,600
Missouri	95	95
Montana	21,550	23,650
Nebraska	1,800	1,850
New Mexico	105,150	105,150
New York	14,700	14,050
Ohio	8,950	9,050
Oklahoma	327,200	324,950
Oklahoma City	54,700	55,100
Seminole Area	74,750	72,450
Rest of State	197,750	197,400
Pennsylvania	45,950	43,200
Tennessee	30	30
Texas	1,833,400	1,781,100
Upper Gulf Coast	482,950	479,250
East Texas Field	380,400	376,300
Rest of Eastern Texas	130,150	130,250
Lower Gulf Coast	168,300	160,400
Southwest Texas	74,600	73,750
South Central Texas	19,450	18,200
West Texas	332,750	300,950
North Texas	140,450	140,750
Panhandle	104,350	101,250
Utah	30	10
West Virginia	8,700	7,650
Wyoming	91,250	96,900
Total United States	4,341,155	4,234,285

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gas Oil & Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	40,051	10-19	109,135	9-14
1941	[1]4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	4,239	8-14	4,227	8-28	245,752	5-29	94,159	3-20	42,913	1- 2	72,881	1- 2
Lows:												
1939	[2]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	71,402	9- 4	30,732	4- 3	66,448	8-14

TRENDS OF 1942 AND 1943

Trends in Week Ended:	Crude Oil			Gasoline		Gas Oil & Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	3,799	34,547	6,813	88,285
March 28	3,820	3,667	263,208	11,663	105,624	3,661	31,756	6,344	83,045
April 25	3,581	3,506	257,073	10,535	102,897	3,267	29,240	6,869	81,107
May 30	3,877	3,522	255,023	10,478	95,355	3,034	31,384	6,993	79,628
June 27	3,719	3,581	253,364	10,713	88,396	3,549	32,851	6,615	77,304
July 25	3,691	3,658	249,262	10,864	82,281	3,647	35,966	6,796	77,816
August 29	3,964	3,697	249,007	11,300	80,831	.....	42,060	.....	78,034
September 26	3,909	3,802	242,785	10,954	80,550	.....	45,945	.....	78,943
October 31	3,901	3,731	239,266	11,153	79,159	.....	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.....	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,265	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	4,079	245,752	10,656	83,937	3,798	32,274	7,672	67,582
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 4, 1943	4,235	4,214	.....	12,343	71,402	4,361	38,673	8,703	67,675
September 5, 1942	3,683	3,675	[4]249,007	11,224	79,093	4,060	43,426	7,000	78,602
Change:									
In week	+39	−13	−316	−77	−1,123	+10	+745	−29	+425
In year	+552	+539	−12,837	+1,119	−7,691	+301	−4,753	+1,703	−10,927
In year	+14.9%	+14.6%	−5.1%	+9.9%	−9.7%	+7.4%	−10.9%	+24.3%	−13.9%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, August 20, 1942.

11,224,000 barrels produced in the corresponding week last year.

The withdrawal of gasoline from storage was accounted for largely by California, which took out 976,000 barrels, although the Middle West withdrew 435,000 barrels, while most other districts added to storage. Gasoline production was down in the Middle West, but it was higher in most other districts.

Production of crude oil increased 39,000 barrels, to 4,235,000 daily, and that amount was 552,000 barrels or 15 percent in excess of the production of 3,683,000 a day in the week of September 5 last year.

Stocks of crude oil were further reduced 316,000 barrels in the week ended August 28 to a total of 236,170,000. That amount was nearly 13 million barrels or 5 percent less than the 249,007,000 barrels on hand August 29 last year.

Oil Scarcities Continue In All Parts of Country

Scarcity continued in all sections of the country, with the East Coast district showing no material improvement in the serious shortage situation there. Some suppliers in that region report that their inventories are near exhaustion, and there has been stringent allocation of supplies to retailers. While there have been limited receipts of materials from the Middle West, these supplies have not been great enough to increase gasoline inventories. Some encouragement is offered by perceptible improvement in the heavy fuel oil situation.

In the Western Pennsylvania refining district, there has been some slight improvement in the gasoline supply situation, but materials still are hard to obtain. There is continued good demand for kerosine, fuel oils, and lubricants, and supplies are scarce.

In the Middle West, burning oils as well as gasoline are extremely short. Range oil is so difficult to obtain that kerosine is being substituted in some instances. However, the range-oil situation is expected to improve within the near future, as many domestic consumers and suppliers have filled their storage tanks. There has been some improvement in the supplies of residual fuel oil, as demand has somewhat eased. Advances in prices quoted by refiners for Ethyl gasoline have raised the high of the range to 7¼ cents a gallon, with the low at 6¾ cents.

In order to make shipments of gasoline to the East Coast, some refiners of the Mid-Continent have been forced to reduce deliveries to regular customers, the limitations being in some instances to the level of 75 percent of purchases last September. Some refiners have borrowed supplies from others, to be repaid a month from now, in order to have enough to ship some East besides supplying local customers.

On the Gulf Coast there is continued scarcity of all products, although kerosine and light fuel oils have eased.

Williams-Copeland Form Drilling Company at Tulsa

Williams-Copeland Drilling Company, Tulsa, has been organized by O. D. Williams and C. M. Copeland, both formerly with Helmerich & Payne, Inc., Copeland as production superintendent and Williams as drilling superintendent. The new company absorbs Universal Casing Pulling Company.

Crude Oil Production Sets New All-Time Record

United States crude oil production rose to a new all-time peak of 4,341,155 barrels daily in the week ended September 11. That was about 4000 barrels above the previous record, set in early 1942. It was 106,870 barrels per day more production than in the previous week.

Texas production jumped 52,300 barrels to a new record of 1,833,400 barrels per day. California output was up 14,000 barrels to 781,450 daily, and Illinois rose to 226,750 from 210,350, a gain of 16,400 barrels. Kansas jumped to 290,450 per day from 263,300, an increase of 27,150 barrels. Louisiana had a 5250-barrel increase to 361,050 barrels per day. Oklahoma rose to 327,200 from 324,950, and Pennsylvania to 45,950 from 43,200.

Michigan's production declined to 55,500 barrels per day from 56,900 daily the week before, and Mississippi to 49,150 from 51,600. Montana was down to 21,550 from 23,650. Wyoming declined to 91,250 from 96,900, and New Mexico to 1800 from 1850.

Carter Raises Oklahoma-Kansas Crude Postings

Effective September 7, The Carter Oil Company has revised its crude price schedule for Oklahoma and Kansas, increasing postings on lower gravity crudes by 1 to 10 cents a barrel, with the larger increases affecting the heavier oils. This revision was made without changes in ceilings, as this company, along with several other purchasers, heretofore have had lower postings than the majority of buyers, on the lower gravity oils.

On the new schedule, crude below 21 gravity is raised from 75 to 85 cents a barrel, 21-21.9 is 87 cents, and a 2-cent differential applies to the top of the scale, which is $1.25 for 40 gravity and above. The oils of 30-30.9 gravity and above remain unchanged in price.

PIPE LINE REVIEW

West Texas Oil Going By Boat from Corpus

Restoration of Humble Pipe Line Company's combination 10- and 12-inch trunk line from West Texas to Ingleside terminal near Corpus Christi to capacity load of 55,000 barrels daily early this month has materially boosted the supply of Permian basin crude for War Emergency Pipe Line Inc.'s 24-inch carrier to the East Coast. Oil handled by the above line is moved via tankers from Ingleside to Houston or Beaumont, then through relay lines to the Longview terminal of the Big-Inch system. The cross country carrier is averaging 300,000 barrels daily, including 170,000 barrels from the East Texas field, 90,000 barrels from the Permian Basin, and 40,000 barrels from the Corpus Christi area. The latter is temporarily moving via tankers to Houston or Beaumont until completion of reconditioning work on the Southwest Emergency Pipe Line Inc.'s combination 14- and 16-inch line about mid October.

British Construct New Oil Pipe Line in India

A new oil pipe line of several hundred miles length has been built in India by the British, according to a British publication. Location of the line was not revealed, nor the capacity, except that it was described as being able to handle "thousands" of gallons of oil per day.

The line is expected to do much toward relieving the strain on the overloaded transport services of the country.

Natural Gas Line in Saskatchewan Planned

Community Services Limited, a producer-consumer-owner company which seeks to supply the area between North Battleford and Lloydminster, Sask., Canada, has opened offices at North Battleford, and is signing up householders in this area. It is stated that a 50 percent signature of householders in North Battleford who desire natural gas service is necessary before the government will approve the project.

The project involves the laying of 110 miles of six-inch pipe and it is stated that a priority permit has been secured for this operation. Application has been made for right of way to follow the railroad from Lloydminster to North Battleford.

Fort Norman-Whitehorse Pipe Line Being Laid

Laying of the pipe line from the sub-Arctic oil field at Camp Canol, Northwest Territory, to the new refinery at Whitehorse, is being carried out under the direction of Captain H. S. Montin of the United States Army Engineers. Montin comes from Oklahoma and has been laying pipe lines in various parts of the United States for years.

The line will run approximately 600 miles. Pipe travels down the MacKenzie from the head of rail at Waterways, Alberta, by barge in 30-foot sections, is then trucked to a pipe depot two miles distant and welded into 60-foot sections. The sections are then trucked to the head of the pipe and welded on the job.

May Increase Capacity of Sinclair's Venezuelan Line

The Sinclair pipe line from the Santa Barbara field in Eastern Venezuela is now moving crude oil at the rate of 16,000 barrels per day. Its capacity at this time is rated at 45,000 barrels per day, but it is possible that it may be increased to 60,000 barrels daily through installation of another pumping station.

The pipe line runs from Santa Barbara to Guanta, on the Carribean, where the company has a terminal. Recently additional acreage was acquired near the terminal for a refinery site, but information was that no authority for the purchase of the refinery equipment has as yet been granted.

International Developments

Wells Being Completed and Capped at Fort Norman

Drilling, testing and capping in rotation is the formula which is being followed on a co-operative basis by Imperial Oil of Canada, Limited, and the United States Army's Canol officers as they work jointly in the development of Norman wells in the Northwest Territory with a view to large scale production as soon as the pipe line is completed to carry the oil from the refinery to Whitehorse. Four Imperial drilling rigs are at work.

The twenty-fourth well was brought in recently. Three more producers are on two islands in the river and another on the opposite shore.

A few wildcat tests have been drilled up and down the river miles from the location of the discovery well on the river bank at Norman Wells. They have been dry or produced only small quantities of oil.

Canadian Rubber Plant Operating

Production of buna-S rubber is getting under way at the Canadian government Polymer Corporation plant at Sarnia, Ontario, and both that type and butyl rubber will be in production at capacity rates by November 1, it was announced last week by the Canadian Wartime Information Board.

The plant is to have a capacity of 34,000 tons of buna-S and 7,000 tons of butyl rubber annually.

Canada also is studying methods for the extraction of natural rubber from native and introduced plants, but so far has found only two which appear to have a useful rubber content—the natural milkweed and the introduced Russian dandelion.

Methods have been developed for mechanically extracting the gum from milkweed, it was said, and while this gum contains both rubber and resins, it shows promise as an agent for improving certain properties, such as heat and tear resistance, of synthetic rubber.

A small processing plant is being built which will go into operation this fall, providing five tons of milkweed gum to be used in a further experimental study of its value as a compounding agent.

Norman Produces 89,929 Barrels in Half Year

Petroleum production in Canada for the first six months of 1943 totalled 5,037,870 barrels, as compared to 5,240,038 barrels for the first six months of 1942, according to figures just released by the Dominion Bureau of Statistics at Ottawa.

The Northwest Territories production, mainly from Fort Norman wells on the Mackenzie River, amounted to 89,929 barrels for the first half of this year as compared to 9,674 barrels during the same period last year. New Brunswick production was up slightly to 13,713 barrels as compared to 12,017 barrels in the first half of 1942, and Ontario production was down from 73,865 barrels to 66,737 barrels from January to June, 1943. Alberta production, primarily in the Turner Valley, was 4,867,491 barrels during the first half of this year as compared to 5,144,482 barrels in the first six months of last year.

Canadian production of crude oil and natural gasoline during June totalled 826,119 barrels compared with 872,812 barrels in May and 856,746 barrels in June last year.

Alberta's output in June was 793,022 barrels, consisting of 777,761 from Turner Valley, 720 from Red Coulee, 1,455 from Wainwright-Ribstone and 13,086 from other fields.

Production of gas in June was 2,513,464,000 cubic feet compared with 3,115,270 000 in the previous month, and 2,361,652,000 in the corresponding month last year. Output during the six months ended June 30, was 24,274,328,000 cubic feet compared with 23,444,782,000 in the same period last year.

Refinery Is Completed At Lethbridge, Canada

The new refinery of the Pacific Oil & Refinery Alberta, Ltd., at Lethbridge, has come into production. It has a capacity of 2,000 barrels a day. It has just undergone a thorough modernization, and its capacity has been materially enlarged. It will handle oil from Southern Alberta fields, including the company's wells in the Del Bonita and Twin River fields.

Four New Drilling Wells At Vermilion, Canada

Vermilata Oils Limited, with large acreage in the Vermilion field, which now produces approximately 500 barrels daily, will commence at once the drilling of four wells.

The Vermilion wells are 1,700 and 1,900 feet deep. The company has all equipment on the ground, and the first well is to spud at once.

Taber Field Output Over 100,000 Barrels

Production of oil in the Taber field of Western Canada has passed the 100,000-barrel mark, with approximately half produced this year and about 60 per cent produced by the original discovery well, Taber-Province 1.

Will Prospect for Oil In Dominican Republic

Application for a concession for oil exploration in the Province of Bahoruco, Dominican Republic, has been made by the salt monopoly, Salinera Nacional. The region, in the southwest part of the republic, currently is being investigated by a North American geologist.

Exploration for Oil in Syria Awaits End of War

Syria Petroleum Company has postponed until after the war its plans for carrying out exploratory drilling and expected exploitation of oil accumulations in Syria.

Drilling Is Planned for Tabor Field in Canada

Increasing interest in the Tabor area of Southern Alberta, which in recent months has witnessed extensive activity, is further intensified by the announcement that Mid-Continent Oil and Gas Limited, with the largest acreage of any independent oil company in the field, is embarking on a drilling program. Contracts have been let to Newell & Chandler Limited, drilling contractors, Calgary, to drill two wells immediately, and two rotary drills are now en route to the property.

Results obtained from the wells already in production have established the existence of oil in commercial quantities. The field produced 8,956 barrels in July, raising the total from inception to 97,559 barrels, since which time output has been boosted beyond 100,000 barrels, of which about half is for the current year.

Development Is Active In Western Canada

Latest reports received from Calgary concerning the Ram River well are that it has been producing at the rate of 33 barrels per day, flowing by heads. Arrangements have been completed to acidize what is believed to be the Devonian limestone. Locations have now been made for two more wells, Ram River 3 and 4.

Field reports from Del Bonita on Pacific Oil & Refining Company's No. 1 well in that area state that progress has been slow owing to mechanical difficulties. At last word, the well had reached 4300 feet.

Activity in the Three Hills area of Alberta is reported to be causing some comment in Western oil circles. Survey parties are said to be at work over a wide area.

Deep Drilling Planned In Northern Ontario

R. E. Holliday, oil geologist with Mining Research Corporation, and W. Dykes, president of MacDyke Oil and Mining Industries, Ltd., are now visiting the Moose River basin, James Bay district of Northern Ontario, to report on the oil shales and oil developments of MacDyke properties in the area. In addition to testing large shale deposits which have been found near the surface, the company is planning drilling to about 1,500 feet, to explore for the oil pool believed by Mining Research engineers to exist in this district.

Pantepec Stockholders to Have Special Meeting

Stockholders of Pantepec Oil Company of Venezuela are scheduled to hold a special meeting in the company's offices in Caracas, Venezuela, on September 13. Purpose of the meeting is to approve directors' action in converting concessions of the company to the new oil law enacted in Venezuela, and to approve amendments to the articles of incorporation and by-laws.

Completions Are Up Slightly in August to New 1943 High; Off 16 Percent for Year

Drilling in the United States continued in August around the high level of the previous month, weekly average well completions having been up slightly and also above the average a year previously. The August average was a new high for this year, although under July, September, and October last year.

For the 5 weeks ended August 28, 1943, there were 2043 wells completed throughout the country, an average of 408 per week. That compared with 396 per week in the previous month and 390 per week in August of last year.

In the first 8 months of this year there were 12,367 completions in the United States, a decrease of 16.3 percent from the 14,785 of the corresponding months last year.

Continuance of drilling at the August rate until the end of the year would result in a total for 1943 of approximately 19,000 completions, or about 14 percent less than the 21,412 completions of 1942 and almost 43 percent less than the 32,210 of 1941.

Several states and districts have shown increases in drilling this year, in spite of the 16 percent decrease for the country as a whole.

In California, there have been more than twice as many completions this year as there were last year—1048 for the first 8 months, against only 486 in the corresponding months last year. However, footage involved has not increased proportionally, as this year's wells have been much shallower on the average. The average depth of completions of 1943 has been 3200 feet, compared with 4267 feet per well for the completions of 1942. The 1942 average depth itself was off materially from depths reached in normal years.

Arkansas has had a slight increase of 3.5 percent in well completions this year over last year and Kansas a small gain of 2.1 percent. Colorado's drilling has more than doubled, with 21 completions recorded for this year against 8 last year. Kentucky also has had more than a doubling of completions, which have totaled 232 compared with 95. Wyoming activity has risen sharply, as there have been 85 completions against 58, an increase of nearly 50 percent.

In states and districts other than those given above, fewer wells have been completed in 1943 than in 1942. For the first 8 months, Texas had 31.5 percent fewer completions than in the corresponding months of 1942, as the total declined to 2695 from 3936. There were only small declines in North and West Central Texas, while Southwest Texas was off but 19 percent. Eastern Texas was down about 50 percent, West Texas 47 percent, the Panhandle 52 percent, the upper Gulf Coast 39 percent, the lower Gulf Coast 32 percent, Southwest Texas 19 percent, and South Central Texas 52 percent.

Illinois has had only a comparatively small decrease in completions—9 percent for the 8 months. Indiana has dropped more than the national average in showing a 36 percent decline. Michigan's decline has been 24 percent.

Louisiana's decrease has been greater than that of Texas, amounting to 38 percent, with northern and southern districts off similarly. Mississippi records a 55 percent decrease. New Mexico is off sharply, with 41 percent fewer completions. Oklahoma has had 10 percent fewer wells than last year.

New York, Ohio, and West Virginia have had only nominal curtailment of drilling from last year, but Pennsylvania has had a 33 percent decrease.

Weekly Average Completions in August Highest for This Year

(Figures compiled from weekly reports of editorial staff men, with following exceptions: Arkansas data from Arkansas Oil & Gas Commission; California from A.P.I. except for August; Illinois from Illinois Geological Survey except for August; Indiana from Indiana Division of Geology; Missouri from Missouri Geological Survey; Bradford and Kane-Clarendon, Pennsylvania, from The Producer's Monthly; Tennessee from Tennessee Division of Geology)

State or District	MONTHLY COMPLETIONS: August, 1943 — Details for August, 1943 — New Wells — *Oil	Gas	Dry	Others[6]	Old Wells Deepened	Total Completions — Aug., 1943[1]	July, 1943[3]	Aug., 1942[2]	Total Footage August, 1943	CUMULATIVE COMPLETIONS: First 8 Months — Details, Jan.-August, 1943 — New Wells — *Oil	Gas	Dry	Others[6]	Old Wells Deepened	Total Completions — Jan.-Aug., 1943[4]	Jan.-Aug., 1942[5]	Percent Change	Total Footage 8 Months 1943	RIGS IN OPERATION — Details for September 1, 1943 — Drilling	Rigs Up	Shut Down	Total: Drilling and RU — Sept. 1 1943	Aug. 1 1943	Sept. 1 1942
Alabama	....	....	1	....	....	1	....	....	5,410	....	....	2	....	....	2	3	— 33.3	11,127	....	....	1	....	2	1
Arizona	....	....	....	....	....	....	....	2	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....
Arkansas	11	....	14	....	....	25	13	21	97,560	80	1	62	2	1	146	141	+ 3.5	722,090	36	6	4	42	33	23
California	117	4	31	....	4	156	126	40	484,852	739	20	270	....	19	1,048	486	+115.6	3,349,728	221	79	15	300	300	153
Colorado	5	....	4	....	....	9	2	1	10,061	10	2	9	....	....	21	8	+162.5	54,058	5	....	8	5	4	15
Florida	....	....	1	....	....	1	....	....	715	....	....	1	....	....	1	....	....	715	2	1	1	3	1	3
Georgia	....	....	....	....	1	....	....	....	....	....	....	1	....	....	1	2	— 50.0	1,240	....	....	....	....	1	....
Illinois	100	1	94	....	4	199	184	183	499,449	671	11	491	16	30	1,219	1,337	— 8.8	2,990,677	159	24	12	183	172	164
Indiana	6	1	17	....	....	24	14	34	35,690	55	4	100	....	4	163	257	— 36.5	272,286	43	4	8	47	41	48
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....
Kansas	98	3	79	4	1	185	149	176	626,345	564	20	493	18	16	1,111	1,088	+ 2.1	3,651,721	218	28	2	246	222	223
Kentucky	23	1	30	....	1	55	32	13	102,911	117	5	106	2	2	232	95	+144.2	456,330	64	4	5	68	59	15
Louisiana	29	7	21	....	....	57	59	81	392,788	222	33	159	....	....	414	668	— 38.0	2,851,254	102	12	8	114	90	93
North	7	5	8	....	....	20	27	35	71,994	73	25	79	....	....	177	303	— 41.5	717,249	27	7	4	34	28	27
South	22	2	13	....	....	37	32	46	320,794	149	8	80	....	....	237	365	— 35.0	2,134,005	75	5	4	80	62	66
Michigan	27	11	35	....	1	74	56	68	172,070	141	29	194	....	7	371	460	— 23.9	938,877	99	15	27	117	111	112
Mississippi	1	....	3	....	....	4	12	7	16,153	13	....	21	....	....	34	76	— 55.2	182,853	10	1	5	11	17	10
Missouri	....	....	2	....	....	2	5	4	1,780	1	2	14	....	....	17	21	— 19.0	13,997	2	....	1	2	2	1
Montana	16	4	7	....	....	27	23	35	63,145	94	33	29	....	....	156	137	— 13.8	333,107	38	7	10	45	46	35
Nebraska	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	27	....	....	2	1	....	2	2	15
New Mexico	9	....	11	....	....	20	16	42	72,560	103	5	46	....	6	160	272	— 41.1	493,824	72	7	15	79	62	70
New York	66	....	....	56	....	122	100	138	163,994	503	4	5	276	....	788	817	— 3.5	1,090,192	92	28	15	120	110	109
North Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	1	1
Ohio	14	29	38	....	2	83	92	95	194,871	88	283	206	1	12	590	722	— 18.2	1,476,093	163	23	39	186	180	203
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Oregon	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....
Pennsylvania	117	36	11	106	1	271	211	346	470,877	808	184	60	736	10	1,798	2,685	— 33.0	3,052,688	233	37	45	270	234	362
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	1	1	2
Tennessee	....	....	1	....	....	1	....	1	1,189	....	2	4	....	....	6	8	— 25.0	6,134	2	3	1	5	3	1
Texas	243	8	197	8	10	466	343	447	1,911,451	1,360	80	1,140	39	76	2,695	3,936	— 31.5	11,208,624	578	48	85	626	588	503
E. T. Bor. Co.'s	1	....	....	....	....	1	2	2	6,644	13	....	3	....	....	16	9	+ 77.7	100,114	8	....	....	8	3	5
E. Tex. Field	....	....	....	....	....	....	....	1	....	....	....	....	5	....	5	16	— 68.7	11,950	....	....	....	....	....	....
Rest of E. Tex.	8	1	16	....	....	25	13	48	142,726	67	3	78	....	1	149	277	— 46.2	805,176	38	4	9	42	37	38
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Utah	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	3	1	2	1
West Virginia	13	53	7	....	3	76	57	72	201,147	54	282	63	....	18	417	490	— 14.8	1,172,864	48	7	11	55	44	40
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New Pools with New Pay in Old Field Feature Kansas

Nate Appleman's Kaufman B-1, east of Dubuque production, Russell County, is testing between 2 and 4 barrels of oil hourly from the Reagan sand with hole bottomed at 3276 feet, still in the pay. Some 1800 feet of oil rose into the hole, with some drilling mud. The well will be an early completion.

Barton County: South Silica field has a new pay at W. N. Bartlett's Weber 1, CW½ SW NW 19-20-11w, which drilled saturation in Kansas City-Lansing lime and received a completion potential of 1011 barrels per day. Arbuckle lime is the major pay stratum of this field.

Marion County: What may be a new field in the north central area of Kansas is indicated at Derby Oil Company's Posposil 1, NE NW NE 16-17-4e, just west of Lost Springs field. The test found good saturation in Mississippi chat and ran pipe to 2345 feet where the operator is drilling two feet of additional hole.

Graham County: Hollow Drilling Company's Fesler 1, NW NW NW 25-9s-21w, on a trend south of the Morel field, found saturation and had a fillup from 1075 feet in 5 hours. The well is testing and will probably be deepened before completion.

Barber County: Pryor & Lockhart's Massey 1, CSE NE 27-30-15w, a recent completion, was classified as an extension to Sun City field at the last meeting of the Kansas Nomenclature Committee.

Oklahoma

Pumper Opens New Pool; Old Field Extended

Mid-Continent Petroleum Corporation's Fowler 1, SW SW NE 33-12-4e, Lincoln County, which showed for a pool opener in the Wilcox, Ordovician sand last week showed considerable water on initial tests but after continual swabbing the water decreased to a negligible quantity and pumping equipment is now being installed to produce. Fowler 1 swabbed 145 barrels of good oil on a 24-hour test through 34 perforations, 5543 to 5547½ feet opposite the sand.

Washita County: Gulf Oil Corporation's deep test in the south Anadarko Basin area is drilling Pennsylvanian sands and shales at 8095 feet. This well is their Hopkins 1, C NW SE 8-8n-20w.

Canadian County: West Edmond field has its westernmost test drilling in Canadian County at Ace Gutowsky's Wilson 1, C SE NW 26-14n-5w, currently moving equipment to the site. This test and producers already completed, may be located upon an accumulation resulting from porosity changes in formations flanking Granite Ridge, in the opinion of some geologists. This, plus lack of evidence of any normal structural condition, may mean the discovery of a stratigraphic type of field roughly parallel to the Ridge. Only further development can define the actual geologic conditions prevailing but as yet unindicated.

Garvin County: Pauls Valley field has received a good extension that may pay off in more than one strata at Cities Service Oil Company's Wimberly 1, SE SW NW 25-4n-1w, which is now in the process of completion after a drill-stem test showed flowing production is to be anticipated from the Pennsylvanian sand and from the deeper Bromide section. Seven-inch casing has been cemented at 4039 feet.

Seminole County: Ace Gutowsky's Madgett 1, NW NE NW 22-10-5e, in the North Searight-Earlsboro area, a wildcat try, is being plugged after Viola and Wilcox were found barren and after tests of thin saturation in Hunton lime failed to pay off.

Caddo County: Oklahoma's deepest drilling well, Denver Producing & Refining Company's Sah-Cam 1, C SE SE 33-10-10w, in the old Binger pool, is being plugged at 13,882 feet, to climax one of the most interesting wells ever to be drilled in the state. Not only did this well prove the importance of structural conditions in the Anadarko basin, but it also stressed the great thickness of Pennsylvania sediments in this area.

West Texas

Two Deep Tests Start In Andrews County

Ordovician prospecting in West Texas gained added momentum through authorization of two deep tests by Humble Oil & Refining Company on big blocks. In Western Andrews County, the company will renew its search in drilling W. F. Scarborough 1, C SW SE PSL 7, Block A-40, 8 miles south of its Sims 1, abandoned in Permian at 9440 feet. Development of its 171,431-acre lease on the Sawyer Cattle Company ranch involves the drilling of Sawyer 2-B, 1980 feet SNL and 1320 feet WEL Section 3, O. G. Coulson Survey, Irion County, 15 miles east by south of a 9995-foot Ellenburger failure. The company has two active deep tests in Andrews County, the deepest being Crews & Mast 1, 3 miles west by north of Means field, drilling at 9390 feet. Carter 1, first deep test for the Deep Rock area, was drilling at 8405 feet on an 8500-foot depth contract.

Andrews County: Mid-Continent Petroleum Corporation's Eilers 1, C NW NW PSL 14, Block A-32, extended the Fullerton field ⅝-mile northeast in flowing 60 barrels hourly on preliminary test after using 8000 gallons of acid in upper pay at 6990-7025 feet. San Andres was topped at 4503 feet. The company's University 1-B, 2½ miles southeast of the field, was drilling at 6210 feet, having topped San Andres at 4340 feet with elevation of 3299 feet, or 76 feet low to the nearest producer. No failures have been drilled within or near this high-gravity sweet-oil area. Texas Pacific Coal & Oil Company's Jackson 4, south edge of the field, flowed 2055 barrels through 2-inch after using 16,000 gallons of acid in broken Clear Fork at 6754-7230 feet.

Winkler County: Sid Richardson et al's Walton 4, prospective discovery for the Clear Fork zone in the Keystone field, flowed 13 barrels of oil in 9 hours after reperforating at 4705-20 feet in Clear Fork, topped at 4792 feet with elevation of 2958 feet. Acid treatment is scheduled. Richardson et al are deepening another Permian producer to Clear Fork, and Skelly Oil Company will deepen its Campbell 3-A, NEc NW PSL 29, Block B-3, to the Clear Fork. In the Hendrick field, American Republics Corporation's Hendrick 4, first deep test for the field, was drilling at 4350 feet on a Clear Fork depth contract.

Ward County: Shell Oil Company's Sealy-Smith 3, ¼-mile west of its Clear Fork discovery in the Monahans pool and a failure in this upper pay, continues to register low structural position in coring cherty-lime at 8710 feet. Top of Silurian was called at 8437 feet with elevation of 2721 feet, being 317 feet low to the company's prolific Ellenburger discovery at 10,082-10, 364 feet. The company is starting Sealy-Smith 4 and 5, projected Ordovician tests that are ½-mile south and north respectively, from the deep well. Gulf Oil Corporation's Estes 1-B, 6½ miles south by east of the above pool, was drilling at 3440 feet on Ellenburger objective. Exploration of the Ellenburger zone immediately north of the Shipley-Silurian pool will be undertaken by H. L. Hunt and associates. The initial deep test for the area became junked after indicating production in Ellenburger.

Reagan County: Amerada Petroleum Corporation's Johnson 1, north extension and highest on structure for the Barnhart field, flowed 494 barrels on 7-hour gauge through 1-inch choke after using 5760 gallons of acid through perforations in lower pay at 9103-75 feet. Multiple-stage acid treatments are due for the upper Ellenburger saturation. The company's Hickman 1, also an extension, was drilling shaley-lime at 8750 feet, and derrick is up for Hickman 1-A.

Failures: Texas Pacific Coal & Oil Company's McCullough 1, Terry County wildcat, abandoned in water at 5553 feet. In Irion County, Pure Oil Company's Sugg 1, Irion County, abandoned in sulphur water at 2516 feet, having passed up a small amount of oil and water at 1999-2007 feet that will justify further explorations in the area.

Deep Tests: Texas Pacific Coal & Oil Company's Lane 52-A, McCamey field, was drilling lime and shale at 7060 feet with formation softening to indicate it may be near base of Devonian. In Pecos County, Phillips Petroleum Company's Price 1, candidate for the district's depth record, was drilling at 12,720 feet. The record is assured unless granite is encountered. In Hale County, Amerada Petroleum Corporation's Kurfees 1 was drilling shale at 8653 feet. Stanolind Oil & Gas Company's American Warehouse 15, Cedar Lake field, was drilling black shale at 11,270 feet.

Completions Are Up Slightly in August to New 1943 High; Off 16 Percent for Year

Drilling in the United States continued in August around the high level of the previous month, weekly average well completions having been up slightly and also above the average a year previously. The August average was a new high for this year, although under July, September, and October last year.

For the 5 weeks ended August 28, 1943, there were 2043 wells completed throughout the country, an average of 408 per week. That compared with 396 per week in the previous month and 390 per week in August of last year.

In the first 8 months of this year there were 12,367 completions in the United States, a decrease of 16.3 percent from the 14,785 of the corresponding months last year.

Continuance of drilling at the August rate until the end of the year would result in a total for 1943 of approximately 19,000 completions, or about 14 percent less than the 21,412 completions of 1942 and almost 43 percent less than the 32,210 of 1941.

Several states and districts have shown increases in drilling this year, in spite of the 16 percent decrease for the country as a whole.

In California, there have been more than twice as many completions this year as there were last year—1048 for the first 8 months, against only 486 in the corresponding months last year. However, footage involved has not increased proportionally, as this year's wells have been much shallower on the average. The average depth of completions of 1943 has been 3200 feet, compared with 4267 feet per well for the completions of 1942. The 1942 average depth itself was off materially from depths reached in normal years.

Arkansas has had a slight increase of 3.5 percent in well completions this year over last year and Kansas a small gain of 2.1 percent. Colorado's drilling has more than doubled, with 21 completions recorded for this year against 8 last year. Kentucky also has had more than a doubling of completions, which have totaled 232 compared with 95. Wyoming activity has risen sharply, as there have been 85 completions against 58, an increase of nearly 50 percent.

In states and districts other than those given above, fewer wells have been completed in 1943 than in 1942. For the first 8 months, Texas had 31.5 percent fewer completions than in the corresponding months of 1942, as the total declined to 2695 from 3936. There were only small declines in North and West Central Texas, while Southwest Texas was off but 19 percent. Eastern Texas was down about 50 percent, West Texas 47 percent, the Panhandle 52 percent, the upper Gulf Coast 39 percent, the lower Gulf Coast 32 percent, Southwest Texas 19 percent, and South Central Texas 52 percent.

Illinois has had only a comparatively small decrease in completions—9 percent for the 8 months. Indiana has dropped more than the national average in showing a 36 percent decline. Michigan's decline has been 24 percent.

Louisiana's decrease has been greater than that of Texas, amounting to 38 percent, with northern and southern districts off similarly. Mississippi records a 55 percent decrease. New Mexico is off sharply, with 41 percent fewer completions. Oklahoma has had 10 percent fewer wells than last year.

New York, Ohio, and West Virginia have had only nominal curtailment of drilling from last year, but Pennsylvania has had a 33 percent decrease.

Weekly Average Completions in August Highest for This Year

(Figures compiled from weekly reports of editorial staff men, with following exceptions: Arkansas data from Arkansas Oil & Gas Commission; California from A.P.I. except for August; Illinois from Illinois Geological Survey except for August; Indiana from Indiana Division of Geology; Missouri from Missouri Geological Survey; Bradford and Kane-Clarendon, Pennsylvania, from The Producer's Monthly; Tennessee from Tennessee Division of Geology)

State or District	MONTHLY COMPLETIONS: August, 1943 — Details for August, 1943 — New Wells — *Oil	Gas	Dry	Others[6]	Old Wells Deepened	Total Completions — Aug., 1943[1]	July, 1943[2]	Aug., 1942[3]	Total Footage August, 1943	CUMULATIVE COMPLETIONS: First 8 Months — Details, Jan.-August, 1943 — New Wells — *Oil	Gas	Dry	Others[6]	Old Wells Deepened	Total Completions — Jan.-Aug., 1943[4]	Jan.-Aug., 1942[5]	Percent Change	Total Footage 8 Months 1943	RIGS IN OPERATION — Details for September 1, 1943 — Drilling	Rigs Up	Shut Down	Total: Drilling and RU — Sept. 1 1943	Aug. 1 1943	Sept. 1 1942
Alabama	....	....	1	....	....	1	....	....	5,410	....	....	2	....	....	2	3	— 33.3	11,127	....	....	1	....	2	1
Arizona	....	....	....	....	....	....	....	2	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....
Arkansas	11	....	14	....	....	25	13	21	97,560	80	1	62	2	1	146	141	+ 3.5	722,090	36	6	4	42	33	23
California	117	4	31	....	4	156	126	40	484,852	739	20	270	....	19	1,048	486	+115.6	3,349,728	221	79	15	300	300	153
Colorado	5	....	4	....	....	9	2	1	10,061	10	2	9	....	....	21	8	+162.5	54,058	5	....	8	5	4	15
Florida	....	....	1	....	....	1	....	....	715	....	....	1	....	....	1	....	....	715	2	1	1	3	1	3
Georgia	....	....	....	1	....	....	....	....	....	....	....	1	....	....	1	2	— 50.0	1,240	....	....	....	....	1	....
Illinois	100	1	94	....	4	199	184	183	499,449	671	11	491	16	30	1,219	1,337	— 8.8	2,990,677	159	24	12	183	172	164
Indiana	6	1	17	....	....	24	14	34	35,690	55	4	100	....	4	163	257	— 36.5	272,286	43	4	8	47	41	48
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....
Kansas	98	3	79	4	1	185	149	176	626,345	564	20	493	18	16	1,111	1,088	+ 2.1	3,651,721	218	28	2	246	222	223
Kentucky	23	1	30	....	1	55	32	13	102,911	117	5	106	2	2	232	95	+144.2	456,330	64	4	5	68	59	15
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Utah	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	3	1	2	1
West Virginia	13	53	7	....	3	76	57	72	201,147	54	282	63	....	18	417	490	— 14.8	1,172,864	48	7	11	55	44	40
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New Pools with New Pay in Old Field Feature Kansas

Nate Appleman's Kaufman B-1, east of Dubuque production, Russell County, is testing between 2 and 4 barrels of oil hourly from the Reagan sand with hole bottomed at 3276 feet, still in the pay. Some 1800 feet of oil rose into the hole, with some drilling mud. The well will be an early completion.

Barton County: South Silica field has a new pay at W. N. Bartlett's Weber 1, CW¼ SW NW 19-20-11w, which drilled saturation in Kansas City-Lansing lime and received a completion potential of 1011 barrels per day. Arbuckle lime is the major pay stratum of this field.

Marion County: What may be a new field in the north central area of Kansas is indicated at Derby Oil Company's Posposil 1, NE NW NE 16-17-4e, just west of Lost Springs field. The test found good saturation in Mississippi chat and ran pipe to 2345 feet where the operator is drilling two feet of additional hole.

Graham County: Hollow Drilling Company's Fesler 1, NW NW NW 25-9s-21w, on a trend south of the Morel field, found saturation and had a fillup from 1075 feet in 5 hours. The well is testing and will probably be deepened before completion.

Barber County: Pryor & Lockhart's Massey 1, CSE NE 27-30-15w, a recent completion, was classified as an extension to Sun City field at the last meeting of the Kansas Nomenclature Committee.

Oklahoma

Pumper Opens New Pool; Old Field Extended

Mid-Continent Petroleum Corporation's Fowler 1, SW SW NE 33-12-4e, Lincoln County, which showed for a pool opener in the Wilcox, Ordovician sand last week showed considerable water on initial tests but after continual swabbing the water decreased to a negligible quantity and pumping equipment is now being installed to produce. Fowler 1 swabbed 145 barrels of good oil on a 24-hour test through 34 perforations, 5543 to 5547½ feet opposite the sand.

Washita County: Gulf Oil Corporation's deep test in the south Anadarko Basin area is drilling Pennsylvanian sands and shales at 8095 feet. This well is their Hopkins 1, C NW SE 8-8n-20w.

Canadian County: West Edmond field has its westernmost test drilling in Canadian County at Ace Gutowsky's Wilson 1, C SE NW 26-14n-5w, currently moving equipment to the site. This test and producers already completed, may be located upon an accumulation resulting from porosity changes in formations flanking Granite Ridge, in the opinion of some geologists. This, plus lack of evidence of any normal structural condition, may mean the discovery of a stratigraphic type of field roughly parallel to the Ridge. Only further development can define the actual geologic conditions prevailing but as yet unindicated.

Garvin County: Pauls Valley field has received a good extension that may pay off in more than one strata at Cities Service Oil Company's Wimberly 1, SE SW NW 25-4n-1w, which is now in the process of completion after a drill-stem test showed flowing production is to be anticipated from the Pennsylvanian sand and from the deeper Bromide section. Seven-inch casing has been cemented at 4039 feet.

Seminole County: Ace Gutowsky's Madgett 1, NW NE NW 22-10-5e, in the North Searight-Earlsboro area, a wildcat try, is being plugged after Viola and Wilcox were found barren and after tests of thin saturation in Hunton lime failed to pay off.

Caddo County: Oklahoma's deepest drilling well, Denver Producing & Refining Company's Sah-Cam 1, C SE SE 33-10-10w, in the old Binger pool, is being plugged at 13,882 feet, to climax one of the most interesting wells ever to be drilled in the state. Not only did this well prove the importance of structural conditions in the Anadarko basin, but it also stressed the great thickness of Pennsylvania sediments in this area.

West Texas

Two Deep Tests Start In Andrews County

Ordovician prospecting in West Texas gained added momentum through authorization of two deep tests by Humble Oil & Refining Company on big blocks. In Western Andrews County, the company will renew its search in drilling W. F. Scarborough 1, C SW SE PSL 7, Block A-40, 8 miles south of its Sims 1, abandoned in Permian at 9440 feet. Development of its 171,431-acre lease on the Sawyer Cattle Company ranch involves the drilling of Sawyer 2-B, 1980 feet SNL and 1320 feet WEL Section 3, O. G. Coulson Survey, Irion County, 15 miles east by south of a 9995-foot Ellenburger failure. The company has two active deep tests in Andrews County, the deepest being Crews & Mast 1, 3 miles west by north of Means field, drilling at 9390 feet. Carter 1, first deep test for the Deep Rock area, was drilling at 8405 feet on an 8500-foot depth contract.

Andrews County: Mid-Continent Petroleum Corporation's Eilers 1, C NW NW PSL 14, Block A-32, extended the Fullerton field ⅝-mile northeast in flowing 60 barrels hourly on preliminary test after using 8000 gallons of acid in upper pay at 6990-7025 feet. San Andres was topped at 4503 feet. The company's University 1-B, 2½ miles southeast of the field, was drilling at 6210 feet, having topped San Andres at 4340 feet with elevation of 3299 feet, or 76 feet low to the nearest producer. No failures have been drilled within or near this high-gravity sweet-oil area. Texas Pacific Coal & Oil Company's Jackson 4, south edge of the field, flowed 2055 barrels through 2-inch after using 16,000 gallons of acid in broken Clear Fork at 6754-7230 feet.

Winkler County: Sid Richardson et al's Walton 4, prospective discovery for the Clear Fork zone in the Keystone field, flowed 13 barrels of oil in 9 hours after reperforating at 4705-20 feet in Clear Fork, topped at 4792 feet with elevation of 2958 feet. Acid treatment is scheduled. Richardson et al are deepening another Permian producer to Clear Fork, and Skelly Oil Company will deepen its Campbell 3-A, NEc NW PSL 29, Block B-3, to the Clear Fork. In the Hendrick field, American Republics Corporation's Hendrick 4, first deep test for the field, was drilling at 4350 feet on a Clear Fork depth contract.

Ward County: Shell Oil Company's Sealy-Smith 3, ¼-mile west of its Clear Fork discovery in the Monahans pool and a failure in this upper pay, continues to register low structural position in coring cherty-lime at 8710 feet. Top of Silurian was called at 8437 feet with elevation of 2721 feet, being 317 feet low to the company's prolific Ellenburger discovery at 10,082-10, 364 feet. The company is starting Sealy-Smith 4 and 5, projected Ordovician tests that are ½-mile south and north respectively, from the deep well. Gulf Oil Corporation's Estes 1-B, 6½ miles south by east of the above pool, was drilling at 3440 feet on Ellenburger objective. Exploration of the Ellenburger zone immediately north of the Shipley-Silurian pool will be undertaken by H. L. Hunt and associates. The initial deep test for the area became junked after indicating production in Ellenburger.

Reagan County: Amerada Petroleum Corporation's Johnson 1, north extension and highest on structure for the Barnhart field, flowed 494 barrels on 7-hour gauge through 1-inch choke after using 5760 gallons of acid through perforations in lower pay at 9103-75 feet. Multiple-stage acid treatments are due for the upper Ellenburger saturation. The company's Hickman 1, also an extension, was drilling shaley-lime at 8750 feet, and derrick is up for Hickman 1-A.

Failures: Texas Pacific Coal & Oil Company's McCullough 1, Terry County wildcat, abandoned in water at 5553 feet. In Irion County, Pure Oil Company's Sugg 1, Irion County, abandoned in sulphur water at 2516 feet, having passed up a small amount of oil and water at 1999-2007 feet that will justify further explorations in the area.

Deep Tests: Texas Pacific Coal & Oil Company's Lane 52-A, McCamey field, was drilling lime and shale at 7060 feet with formation softening to indicate it may be near base of Devonian. In Pecos County, Phillips Petroleum Company's Price 1, candidate for the district's depth record, was drilling at 12,720 feet. The record is assured unless granite is encountered. In Hale County, Amerada Petroleum Corporation's Kurfees 1 was drilling shale at 8653 feet. Stanolind Oil & Gas Company's American Warehouse 15, Cedar Lake field, was drilling black shale at 11,270 feet.

North Texas

Strawn Oil Strike Confirmed by Second Well

Continental Oil Company's West 2, south offset to its recent Strawn sand discovery near the west edge of Wichita Falls, confirmed the new area in flowing 108 barrels of oil on 24-hour test through 12/64-inch choke. Production is from sand at 4229-39 feet. A. R. Dillard et al's Waggoner 1, mile south of the above wells, proved dry in Lower Strawn drilled to 4650 feet, and then plugged back to 4350 feet to land 7-inch at 4243 feet for test of broken oil sand at 4321-25 feet.

Walnut Bend: Winger sand producing sector of this field was enlarged southwest when Sinclair Prairie Oil Company's Cox 12-B, Block 60, flowed 1382 barrels through open 2-inch from perforations in Strawn at 5450-5520 feet. The company's Ramsey 15 assures nominal northwest extension with thinning of sand section noted in entering Simpson at 5557-5646 feet. Top of Winger was called at 5516 feet, or same datum point as logged by Cox 12-B. Casing plugs will be drilled with a spudder.

Montague County: Two prospects in the Fort Worth basin were proceeding to Ordovician objective after finding Bend lime series dry. Lion Oil Refining Company's Freeman 1, 4 miles south of Forestburg, entered Bend at 6390 feet, and was drilling at 6840 feet. C. E. Rodgers and A. R. Dillard's Neeld-Stanolind 1, 1¼ miles southeast of Fruitland, was drilling at 6050 feet in Bend, topped at 5876 feet, being 61 feet low to an Ellenburger failure 2 miles southwest. Wilcox Oil & Gas Company's Tucker 1, ⅝-mile southeast of the Hults-Owens pool, set pipe to test nominal oil saturation in Bend conglomerate at 6091-98 feet, estimated 64 feet low.

Clay County: L. T. Burns et al's Lyles 2, west offset to the Burns-Midway pool discovery, flowed 260 barrels of oil on 3-hour test through ¾-inch choke after using 1000 gallons of acid in Mississippian saturation at 6042-70 feet. This second well is lower, and probably on the west edge of structure.

Jack County: Brazos River Gas Company's Clayton 2, Jas. Matthews survey, first deep test for southeast portion of the Ryson district, tested a small flow of gas in sandy-lime at 4750-68 feet, and will drill ahead. Black lime was logged at 3996-4102 feet.

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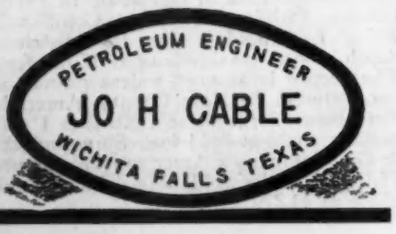

East Texas

Clarksville Sand Yields Pumper in Wood County

Sub-Clarksville sand showed adequate oil to indicate a commercial pumper in F. R. Jackson-Fisher & Fields' McCarley 1-A, second test for the Oak Grove prospect, Wood County. Drill-stem test of Sub-Clarksville broken pay at 5013-23 feet recovered 3700 feet of oil and mud without water. This zone is credited with an aggregate of 6 feet of oil pay. Second drill-stem test at 5019-36 feet yielded a light show of oil with 1000 feet of salt water, and drilling was resumed to explore the Woodbine, which showed for low-gravity oil production when a previous test was junked while trying to land pipe.

Van Zandt County: Superior Oil Company's Groves 1, projected Travis Peak test 4½ miles north of Canton, logged top of Georgetown at 5130 feet and Fort Worth lime at 5745 feet. It was coring for top of Paluxy late last week. This wildcat encountered nominal oil stain and odor in basal Woodbine.

Kaufman County: Sun Oil Company's Rutledge 1, first Smackover lime project in Texas to indicate possible production, began drilling plugs with bit on tubing late last week with 5½-inch cemented at 10,044 feet, or 13 feet off bottom. This wildcat entered Smackover at 10,042 feet, and cores carried sufficient oil porosity to warrant the landing of pipe for a decisive test.

Franklin County: Tide Water-Seaboard Oil Company's G. L. Gilbert 1, north offset to dual-pay discovery for New Hope pool, was awaiting completion with 5½-inch at 7914 feet, or top of Travis Peak, which carried oil saturation at 7916-27 and 7952-66 feet. This zone will be produced through tubing, and perforations will be made in Rodessa (Bacon) lime at 7292-7312 feet while porosity in the Hill sand at 7422-40 feet is a new prospective oil or gas zone for the area. The partnership's R. L. Gilbert 1, southeast offset to the discovery, cemented 7-inch at 4499 feet because of stuck pipe, and was drilling at 7939 feet. Oil pay was logged in Rodessa and Hill zones.

Limestone County: Phillips Petroleum Company has contracted for the drilling of Ethel Barron 1, SA&MG Survey and a mile south of the Barron pool, which produces gas-distillate and oil from Pettit. The company has 1200 acres, and its first test will be east of fault and down dip.

Manziel Pool: Shell-Navarro Oil Company's Lee-White 1, south outpost for this most recent Wood County oil strike in Paluxy, lessened its low structural position in logging top of Goodland at 6240 feet and Paluxy at 6308 feet after correlating 218 feet low on Georgetown, topped at 5250 feet. First oil saturation was logged at 6312 feet, and a fishing job developed at 6414 feet. Roger Lacy et al's Shamburger-Magnolia 1, north outpost, was drilling at 4560 feet, havnig entered Pecan chalk at 2600 feet and Austin chalk at 3874 feet. These outposts have considerable bearing on future development in the area.

BEN F. PILCHER, geologist for The Texas Company, has been transferred from Fort Worth division office to Midland, where he will succeed L. C. Thomas, West Texas-New Mexico district geologist. Thomas will engage in consulting work with office at Midland.

Southwest Texas

Hobson Trend Interest Revised by Discovery

Discovery of production in the Hobson sand at the Greens Branch field, western McMullen County, this week, focused interest on that area and brought the Hobson trend into prominence again. Quintana Petroleum Company's South Texas Syndicate 7-C showed 750 feet of oil, 32-gravity, on a drill-stem test at 3935½-41 feet. Total depth of the hole is 3941 feet. The plug was drilled Saturday and a production test was to be made, reports of which have not been received.

This show for a possible commercial well, is the first of its kind in the Reklaw-Carrizo contact zone in the immediate area. Shows of oil have been reported from other tests, in the top of the same sand, but have made fresh water.

Structurally, Syndicate 7-C is 13 feet higher than the discovery gasser in the Wilcox zone. This show from the Hobson field sand, it is believed, will revive activity along the Hobson trend which has recently slowed down following completion of several dry holes. Interest should extend toward the southwest through southeastern Atascosa and northwestern Live Oak counties.

Duval County: Two new wildcats were scheduled to start soon: In the old Cole field area, Lewis will test to 3500 feet in Benavides 1, four miles east of Bruni townsite. Pan American Production Company will drill Parr 1, one mile east of the Thomas-Lockhart area, six miles northwest of San Diego.

In the Strake field area, Stanolind Oil & Gas Company's Clara Driscoll 2 was retesting new perforations at 3769-73 feet after squeezing the first perforation which showed salt water with oil scum. Strong gas showings were found in the Pettus sand, with light oil showings toward the bottom.

Starr County: Continental Oil Com-

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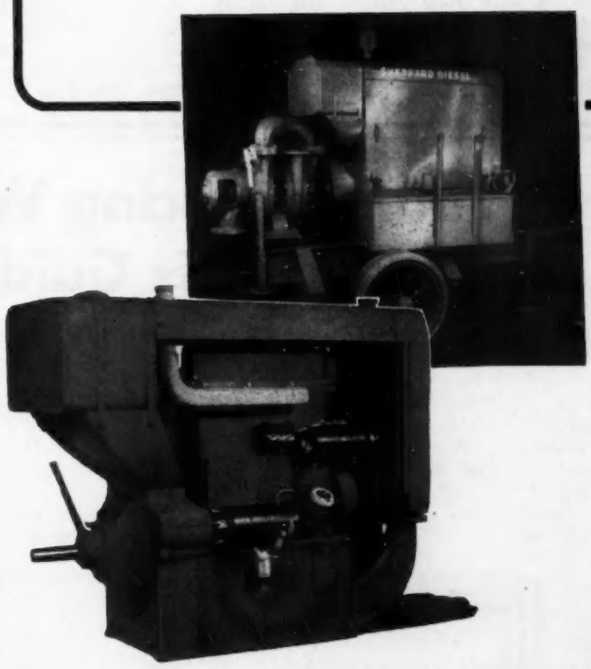

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pany has spudded a second test in the Cameron district, 1¾ miles north and northeast of the Rincon field in Cameron 2, 1320 feet south of Cameron 1, the discovery. Dallas Joint Stock Land Bank 2, a third test to be drilled by Continental, ½ mile northeast of Cameron 1, has been located.

Zapata County: The Texas Company's Hartman 2, wildcat 3½ miles southwest of the Colorado field, showed 870,000 feet of gas on a ¼-inch choke, with a slight spray of salt water. Total depth of the hole is 2310 feet, with 5½-inch casing set at 2296 feet. The well was acidized with 1000 gallons and tested, with mostly salt water showing, and a slight trace of oil. After reperforation at 1941-43 feet, the gas flow was recovered.

Texas Gulf Coast

New Field, Extension, and New Deep Pay This Week

A quarter-mile extension to the Dyersdale field, opening of a deeper sand on the east flank of the old Humble dome, and important shows of oil in a southwest flank test at Blue Ridge, were outstanding developments in the Gulf Coast area this week.

Harris County: At the Dyersdale field, Nielsen et al proved the westward extension in Reichardt 1, completed for 171 barrels per day, flowing through ¼-inch choke. Perforations were made at 4060-66 feet in sand topped at 4058 feet, 5½-inch casing was set on the bottom at 4069 feet. Gas-oil ratio was 400/1, gravity 24, and water content was .2 percent.

The deep sand development in the Humble Deep area was The Texas Company's Stevenson Fee 53 which flowed 415 barrels of pipe-line oil through ¼-inch choke, from perforations at 5811-19 feet. Considerable importance is attached to this well since it is 660 feet north of Stevenson Fee 52 which discovered the deep pay. Total depth of the hole is 5833 feet, and production is thought to be coming from the lower Yegua zone, or the Cook Mountain. Already a third test for the same pay has been located in Stevenson Fee 54, 660 feet south of the discovery. Contract depth is 6500 feet, with drilling to start by next week.

Fort Bend County: Strong indications of production in Phillips Petroleum Company's Robinson 3, on the southwest flank of the old Blue Ridge Dome, centered attention on this old area. Good showings were reported, but completion of the well has been delayed because of difficulties in cementing. Perforations have been squeezed off and another test will be made next week. Total depth of the hole, sidetracked, is 4480 feet. Considerable acreage will come into play if a producer is made.

Hardin County: A test scheduled to start in the old Liberty area which has been dormant for a good many months, is Constantin's Geraldine Humphreys 1 which is contracted to 7600 feet, and should be drilling by next week.

Fayette County: Continental Oil Company's Cockrill 1, southwest of Cistern townsite, was tested finally last week for from between 40 and 50 barrels of oil daily, steady production. This producer marks a new field, and the company has moved in materials for a second test six miles northeast of the discovery. This producer spotlights the Reklaw zone and brings the Hobson trend to attention again, with a probable increase in activity through Fayette, Karnes and Gonzales counties.

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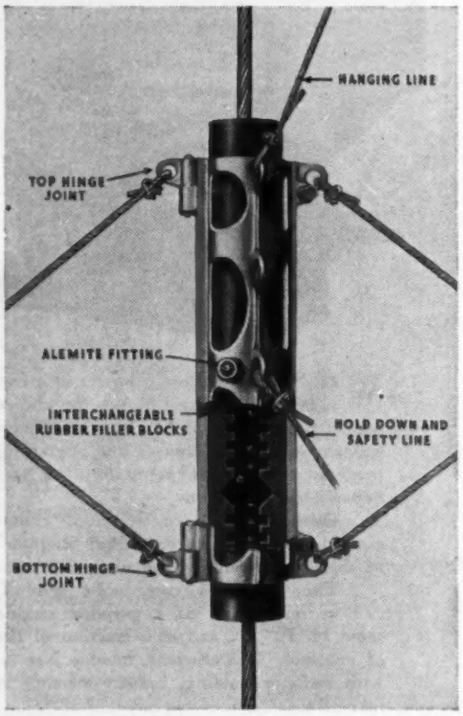

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South Louisiana

Pine Prairie Dome Output Extended with Wilcox Well

In Evangeline Parish, the old Pine Prairie Dome, a major producer on the Louisiana Cockfield - Sparta - Wilcox trend, promises renewed activity as a result of The Texas Company's Ladanois Land Company 4-B which flowed 332 barrels of 37.8-gravity oil through 12/64-inch choke. This producer opens production in the Wilcox on the southwest flank of the dome and should mean considerable development for the area. Total depth of the new producer is 10,538 feet, with 5½-inch casing set on bottom. Wilcox was topped at 9,848 feet and after several perforations resulted in the flow. Gas-oil ratio was 1000-1.

Gulf Refining Company will test Wilcox on the southeast flank of this dome in Chapman-Miller-Lahaye Unit 1, SWC 2-4s-1w. Contract depth is 11,000 feet.

Acadia Parish: The Lewisburg field was extended a mile south with Amerada Petroleum Corporation's Daigle 1, Section 75-7s-3e, for a potential of 149 barrels of condensate through 5/32-inch choke, tubing pressure 3550 pounds, 60-gravity. Total depth is 10,501 feet.

St. Charles Parish: The second good producer in the regular 6400-foot sand

at Bayou Couba, was completed last week, flowing 226 barrels from perforations at 6487-97 feet, through 9/64-inch choke, in Gulf Refining Company's Delta Securities 11, Section 18-15s-22e. Location for Delta Securities 12 has been staked in Section 18-15s-22e, with contract depth to 9000 feet. Work will begin at once.

St. Martin Parish: Amerada Petroleum Corporation has staked location for a wildcat in the Arnuadville district, just south of St. Landry parish line, in Section 44-7s-5e. Roads are now being built to the site of the well.

St. James Parish: Humble Oil & Refining Company will drill another Hester test, in Colonial Sugars Company 2, in Section 1-11s-5e. Proposed depth is 9000 feet.

St. Landry Parish: In the Sunset area, about a mile southeast of Charles 1 dry hole, section 23-7s-5e, Abercrombie et al have spudded in for a 12,000-foot test, in Stelly Unit 1.

Wildcats: Among South Louisiana wildcat tests that have drawn special attention recently is Danciger et al's Hattie Haas 1, Section 22-4s-1w, Evangeline Parish, which was reported cutting and pulling tubing after the packer could not be collapsed following a drill stem test. At 12,040-60 feet, white condensate and salt water were recovered. several weeks ago, at 12-116-22 feet there was a show of distillate and water.

North Louisiana

Jackson Parish Deep Wildcat Plugs Back

Mid-Continent Petroleum Corporation's Tremont 1, deep wildcat in Jackson Parish, Section 31-15n-3w, was reported to have plugged back to 7,600 feet and set casing for a test. Little information has been released on this test.

A fourth location in the new Tensas Parish Holly Ridge discovery area has been made by Sohio Producing Company's Penrod-Jordan 1, SW SE 8-11n-10e. Carter Oil Company's Shelly 2, SE NW 19-11n-10e, is drilling below 615 feet. Union Producing Company's Jurden 1 is located in the NE 19-11n-e.

Location has been made for a north Webster Parish wildcat, S. J. Beene's Adkins 1, NW SW 32-23n-9w.

Phillips Petroleum Company's (Frank J. Hall) Kent Breard 1, wildcat, SE 9-18n-w, Caddo Parish, has been acidized after perforations at 5,880-90 and 5,853-73 feet in an effort at completion after other tests had failed in the Pettit and Travis Peak.

Shell Oil Company's S. H. Bolinger 1, east outpost test of the north Carterville Pettit producing zone is attempting to complete after perforations at 6,092 to 6,108 feet.

Surface casing has been set at 1,232 feet at D. C. Richardson's Wurtzbaugh 1, 25-19n-11w, projected Cotton Valley test in the Bellevue shallow field of Bossier Parish.

Carter Oil Company's Bollinger 1, 20-22n-11w, wildcat, is coring in lime at 5,457 feet.

GAYLORD DOROUGH, Gulf Oil Corporation scout at Billings, Montana, has been replaced by E. L. Chapman, formerly of Enid, Oklahoma.

Arkansas

PAO Variation May Increase Stephens-Smart Output

Variation of PAO-11 has been granted operators in the Stephens-Smart area of Columbia, Nevada, and Ouachita counties, Arkansas, by PAW, allowing the drilling of two wells on each 40 acres. In their application for this variation, operators requested that they be permitted to follow the dictates of good geological and engineering practice in locating wells. In granting the variation, PAW prescribed these limitations: Each such well shall be drilled within 30 feet of the center of a quarter of a quarter-quarter section; each such well shall be drilled at least 450 feet from any other drilling or producible well; each such well shall be drilled at least 330 feet from any lease line, property line, or subdivision line which separates unconsolidated property interests; each such well shall be drilled with due diligence to maintain a vertical bore; and not more than two drilling or producible wells shall be located on any quarter-quarter section.

There are 47 producing wells in the Smart area of the Stephens field, 16 producing from Tokio at approximately 2500 feet, 5 from Glen Rose at approximately 3200 feet, and 26 wells in Travis Peak at 3500 feet. These wells are now producing 4000 barrels of 28-30° API sweet oil daily.

On September 26, 1941, the Arkansas Oil and Gas Commission found that not more than one well should be drilled on any 10-acre lease in the subject area, providing also that the wells should be drilled in the center of the 10-acre units. Federal Conservation Order M-68 limited drilling to not more than 1 well to each 40 surface acres and as a result there are now 8 wells on 10-acre units, 22 wells in the center of 40-acre units, and 17 wells producing from the center of a quarter of a governmental quarter-quarter section of land.

Proven reserves under the area exceed 24 million barrels. Under the variation granted, 49 selected locations will be drilled, and it is estimated that daily average production can be raised to not less than 8500 barrels.

The fact that the area is productive of sweet oil and that there is an absence of high pressure will limit the requirements of first grade steel to only 83 tons. The balance of the steel needed, 2449 tons, can be second-hand material.

California

New Gas Field Opened In Mendota Area

Discovery of a new gas field is indicated by daily flow of 8,000,000 feet from The Texas Company's Moffatt 7-1, NW NW NW 7-12-13, Firebaugh area, Madera County, on formation test from bottom of 3969 feet with packer set at 3915 feet. The hole will be carried down further before completion.

Kern County: On a considerable

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block of leases the company has assembled north of the Fruitvale field, Tide Water Associated Oil Company is starting an initial wildcat, 54-6, SW SW NE 6-29-27, 1½ miles from production.

Continued testing of the Paloma area discovery well, Western Gulf Oil Company-The Texas Company's L.A.A.C. 36-1, SW NW SW 1-32-26, is yielding progressively better results with likelihood that its full potentialities will be determinable within a week or so. Latest production figures gave daily rate of 160 barrels of 29.9-gravity clean oil with 22/64-inch choke and pressures of 50-90/1000 pounds. A sustained rate of 150 barrels daily for an initial period of 60 days would qualify 240 acres of the lease on which the discovery well is located for participation in all Paloma field production under the unit plan in effect there.

In the McClung area, Continental Oil Company's wildcat, KCL G-1, 4-30-26, has run into water troubles, and tests again have had to be deferred. Good showings between 7470-7502 feet indicate possibilities that this well may open a new field of kindred type to Rio Bravo and Greeley. The well is being completed from a plugged depth of 7502 feet.

A formation test run on Bandini Petroleum Corporation's Signal Hill 1 for a southeasterly extension of Round Mountain field gave encouraging results, with a recovery of 180 feet of oil, 277 feet gassy mud and 135 feet of oily sand in the bottom. With the present bottom at 2435 feet in oil sand the hole will be deepened before completion.

Los Angeles County: With the entry of Signal Oil & Gas Company in the extension of Newport Beach field discovered some months ago, and steps now being taken to lease all the adjacent offshore state lands, a campaign of active development is in prospect. The discovery well continues to pump about 25 barrels a day.

The attempt of Barnsdall Oil Company to extend Montebello field with its wildcat Baldwin 1, NE SW SE 11-2-11 resulted in failure. Test of showing between 2400 and 2446 feet resulted in a recovery of 2100 feet of salt water and the well, bottomed at 2983 feet, was abandoned.

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BOTTOM WATER SEEPAGE WON'T
SLOW DOWN OUR PRODUCTION!"
You, too, can be confident bottom water shut-downs won't cause costly delays in your production of the oil our war effort so urgently needs. When you strike bottom water, quickly tamp a cartridge of Eagle Lead Wool into the hole. The fine, flexible strands of this metallic wool effectively pack every crack and corner, become a solid, snug-fitting plug, permanent and non-corrosive. Economical Eagle Lead Wool is rapidly installed in Eagle Wire Containers, sized to fit all casings. Safeguard against bottom water sabotage—order through your jobber today!
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Seals off Bottom Water-Keeps 'em Flowing!
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These 3 Eagle Bearing Metals meet most requirements . . .
Eagle Dreadnaught—for extreme speed and pressure conditions
Eagle Outlasta—for medium speed and pressure conditions
Eagle Durable—for low speed and pressure conditions

Michigan

Rose Lake Failures Blight Its Chances

The Rose Lake structure in Osceola County was materially reduced so far as the Traverse formation is concerned as a big reserve possibility with failures on both the north and south side of the field. Rowmor et al's Sanford 1, S½ SE NE 31-19n-9w, ½-mile northeast of the discovery, logged Traverse at 3149 feet and drilled black water at 3165-68 feet. It was 22 feet low on the objective but it will be deepened to test the Dundee, approximately 3800 feet. The discovery for the field drilled through the Dundee into the Monroe and then was plugged back to complete in Traverse.

Sun Oil Company's Bowman 2, S½ SE NE 6-18n-9w, ½-mile southeast of the discovery, and 1320 feet south of a producer, also drilled the Traverse dry and will be junked at 3252 feet.

Sohio Producing Company's east offset to the discovery, Bowker 1, S½ SE SE 31-19n-9w, completed in the Traverse for 979 barrels oil natural in 22 hours, for the third producer on the structure.

Newaygo County: Pure Oil Company's Troeger 1, E½ SE NE 8-14n-11w, north offset to the Goodwell field discovery, completed for a potential of 388 barrels per day at 2840 feet, 80 feet in the Traverse, to open a new producing zone in the formation. The first three producers, including the discovery, completed in the same formation at an average depth of 20 to 35 feet in the zone.

Osceola County: Sun Oil Company's Davy 1, N½ NE SW 25-18n-8w, a mile east of the Evart oil field, logged Dundee lime at 3745 feet and carried an oil-gas pay at 3746-48 feet. Drilling was suspended to cement casing and set tanks.

Clare County: Leonard and Rowmor's Miltner 1, 1-20n-6w, wildcat, is pumping 50 to 70 barrels of oil and from 20 to 40 barrels of water from a Dundee pay at 3840 feet. Test has been completed as a new pool discovery, five miles northeast of the West Winterfield pool. Locations have been surveyed for two offsets.

Montcalm County: American Production Company's Bentley 1, Section 28-11n-7w, Douglass Township, completed for 4,000,000 cubic feet of gas per day in the Michigan Stray sand at 1197½ feet, with 7 feet of pay, to indicate important new shallow gas field seven miles south of the Six Lakes gas field.

United States Well Completions

ARIZONA WILDCATS

Apache County—Failure: Rincon Drl Synd's State 1, c n½ nw ne 28-13n-27e, abnd 685 ft.

Cochise County—Failure: Funk Development Co.'s Fee 1, c se ne 27-13s-30e, abnd in igneous rock 6668 ft.

Maricopa County — Failure: Peoples O&G Co.'s Gardner 1, se¼ 2-1n-3e, abnd.

Yavapai County—Failures: Ari-Copa Dr & Mining Co.'s Puntenny 1, sw¼ 27-18n-2w, abnd 460 ft.

NORTH TEXAS WILDCATS

Archer Couty—Failures: L. T. Burns et al's Frerich 1, 1500 ft nsl and 1000 ft ewl sec 106, blk 4, Clark-Plumb sur, abnd 6006 ft.

G. E. Kadane & Sons' Parkey 1, 3300 ft snl and 1980 ft wel SP 1, A-419, KMA lime 4065 ft, sand 4132 ft, Ellenburger 4898 ft, abnd 5004 ft.

Baylor County—Failure: American Liberty Oil Co.'s Horany 1, 330 ft out nwc sw TE&L 2478, abnd 2020 ft.

ARKANSAS

Union County—New London: C. H. Lyon's King 1, c 18-18w-11w, flow 78 bbls in 12 hours, 22/64-in, tubing pressure 135 lbs, 5800 ft in Cotton Valley.

ARKANSAS WILDCATS

Ouchita County: McAlester's Walker 1, 16-14-18, abnd 4340 ft.

CALIFORNIA

Fresno County—Coalina, old field: Standard's 8-7C, ne ne nw 7-20-15, pump 2 bbls 12.2-gr oil, 6 water, perf 1780-1830, 1930-2015 ft, td 2020 ft.

Texas Co.'s A-4, nw nw ne 6-20-15, pump no est, 52 ft perf 1272 ft, td 1341 ft, pd 1280 ft.

Texas Co.'s C-1, se sw sw 30-20-15, pump 9 bbls oil, 93 water, 131 ft perf 2189 ft, td 2433 ft, pd 2190 ft.

Fresno County—Riverdale: Amerada's Mathias F-3-15, ne sw 15-17-19, flow 234 bbls 37.3-gr 10/64-in, 115 ft perf 7930 ft, td 7930 ft.

Glenn County—Chico area: Superior Oil Co.'s Knight 1, ne sw ne 13-21-2, flow 5,000,000 gas, shut in, td 6346 ft.

Kern County—Belridge, South: Belridge Oil Co.'s 15A-34, nw nw sw 34-28-21, pump 20 bbls 15.9-gr oil, 4 water, 381 ft perf 725 ft, td 725 ft.

Belridge Oil Co.'s 27A-35, pump 35 bbls 11.7-gr oil, 5 water, perf 675-760, 962-1049, 1140-1200 ft, td 1200 ft.

Kern County—Buena Vista Hills: Standard's 201-11D, nw nw nw 11-32-24, pump 63 bbls, 58 ft perf 2798 ft, td 2802 ft.

Kern County—Midway-Sunset: Richfield's Fairfield 200, se se se 11-31-22, pump 19 bbls 17.2-gr oil, 54 water, 282 ft perf 1870 ft, td 1880 ft.

Kern County—Mount Poso: Ring Oil Co.'s 29-24, ne sw 29-26-28, pump 76 bbls 15.6-gr, 25 ft perf 1725 ft, Vedder 1707 ft, td 1725 ft.

Kern County—Poso Creek: Pacific Western Oil Corp.'s Enas Fee 27A, ne sw sw 21-27-27, pump, no est, perf 2032-2080 ft, td 2084 ft.

Kern County—Kern Front: Standard's 56, se ne sw 15-28-27, pump 99 bbls 12.2-gr oil, 12 water, 150 ft perf 2395 ft, td 2400 ft.

Kern County—Poso Creek-Premier: Standard's 5-36, ne ne nw 5-28-27, pump 30 bbls oil, 15 water, 121 ft perf 2708 ft, td 2815 ft, pd 2710 ft.

Kings County—Kettleman North Dome: Standard's 41-13P, ne ne nw 13-22-17, flow 99 bbls, perf 8430-8225, 7340-7235 ft, td 8440 ft.

Standard's 67-27Q, se sw se 27-22-18, gas lift, no est, 125 ft perf 7970 ft, td 7970 ft.

Los Angeles County—Aliso Canyon: Tide Water Associated's Standard Senson 1-2, 928 ft s 6854 ft w station 84 city boundary, flow 1406 bbls 22.7-gr oil, 173 water, 40/64-in, td 8821 ft.

Los Angeles County—Wilmington: De Marsh Oil Co's Phillips, 3,125 ft n 225 ft c/ls Mauretania and Figueroa, pump 39 bbls 19.2-gr oil, 3 water, perf 3080-3135, 3180-3403-, 3495-3705 ft, td 3705 ft.

Union Pacific's 225, 4630 ft s 130 ft w c/ls Ford and Anaheim, flow, no est, 192 ft perf 2622 ft, td 2624 ft.

Westgate-Greenland Oil Co.'s Youngstown 1, 210 ft n 50 ft w c/ls State and Goodrich Aves., pump 30 bbls 15.5-gr, 150 ft perf 3597 ft, td 3597 ft.

Orange County—Coyote, East: Hathaway Co.'s A. U. W. 7, 13-3-10, pump 81 bbls oil, 14 water, td 5080 ft.

Orange County—Huntington Beach: Southwest Exploration Co.'s State J-5 953 ft wly along proj c/l Ocean Ave fr c/l 23rd St thence 123 ft nly at r/a, flow 555 bbls 20.9-gr, 747 ft perf 3175 ft, td 3195 ft.

Standard's A-45, 3750 nwly along c/l Wesley Ave fr c/l 23rd St thence 750 ft swly at r/a, pump 75 bbls 14-gr, td 3530 ft, pd 3490 ft.

Santa Barbara County—Santa Maria Valley: Union's Adam 4, nw sw se 24-10-34, pump 116 bbls 15.6-gr, 766 ft perf 3157 ft, td 3159 ft.

Union's Battles 6, se se se 24-10-34, pump 252 bbls 14.5-gr, 838 ft perf 3213 ft, td 3217 ft.

Ventura County—Rincon (Old well deepened): Chansler Canfield Midway Oil Co.'s B-21, nw sw se 8-3-24, pump 136 bbls 30-gr oil, 98 water, otd 4536 ft, deepened to 6300 ft.

Ventura County—Ventura Avenue: Tide Water Associated's V. L. & W. 54, 749 ft n 13,012 ft e c/l No 11, flow 561 bbls 27.9-gr, 683 ft perf 11,075 ft, td 11,077 ft.

CALIFORNIA WILDCATS

Contra Costa County—Failure: Standard's Keller 1 sw se se 26-2-1, Mulligan Hills area, abnd 4133 ft.

Kern County—Failure: Trico Oil & Gas Co.'s Workman 1, sw se sw 5-28-29, Round Mountain area, abnd 1382 ft.

Los Angeles County—Failure: Charles E. McCartney's Hurley 1, sw se sw 4-2-10, Puente Hills area, abnd 3259 ft.

Tulare County—Failure: Tide Water Associated's Corehole 76-21, sw ne se 21-1-26, Porterville area, abnd 2595 ft.

ILLINOIS

Bond County: Schneider & Gwin's File 2, sw se sw 22-5n-4w, abnd 1135 ft.

Bond County Gas Co.'s Ingels 1, ne ne sw 29-6n-3w, abnd 954 ft.

Clark County: Lewis Moreland's Slater 1, se ne ne 25-10n-14w, abnd 527 ft.

Christian County: Wainwright's Bernard 1, se nw sw 26-15n-2w, abnd 2000 ft.

Clay County: B. F. Williams' Green Cons 2, nw sw ne 30-3n-6e, Benoist 2692-2701 ft, 12 bbls, 2709 ft.

Texas Co.'s Byers 3, se se nw 14-5n-5e, Aux Vases 2338 ft, 55 bbls, 2338 ft.

W. C. McBride's Duff 1, se sw nw 35-4n-7e, Cypress 2596 ft, 43 bbls, 2605 ft.

Edwards County: Bauman's Gaede 1, e½ nw se 9-1n-10e, McCl 3297-3300, 850 bbls, 3300 ft.

Illinois Prod. Co.'s Gillespie 1, e½ ne se 9-1n-10e, McCl 3293-98 ft, 96 bbls, 3320 ft.

Illinois Prod. Co.'s Rawlston 1, e½ se se 9-1n-10e, abnd 3348 ft.

Ryan Oil Co.'s Rawlston 1, e½ nw ne 16-1n-10e, abnd 3319 ft.

Effingham County: Luttrell et al's See B 1, nw se se 27-6n-5e, Aux Vases 2366 ft, 19 bbls, 2470 ft.

Franklin County: Adkins' Boner 3, sw sw nw 30-7s-3e, Tar Springs 2082-2103 ft, 48 bbls, 2103 ft.

Gallatin County: Ralph Halbert et al's Benner Gregg Comm 1, se nw 22-7s-8e, abnd 2957 ft.

Hamilton County: Freeze's Barker 1, nw se nw 13-6s-6e, abnd 1336 ft.

Markham Drilling Co.'s Pearson 1, sw se ne 13-6s-6e, abnd 2514 ft.

Pure's Allen 1, nw ne sw 18-6s-6e, McCl 3295 ft, 198 bbls, 3415 ft.

Shell's Webb 2, se ne sw 18-6s-7e, Tar Springs 2380 ft and 2423 ft, 242 bbls, 3080 ft.

Madison County: Bryant et al's Leland Faires 1, c ne nw 34-3n-6w, Trenton lime 2347 ft, 8 bbls, 2347 ft.

Marion County: Oberling's Hill A-1, nw se sw 26-4n-1e, abnd 1382 ft.

Wabash County: Yingling's Shaw 1, ne ne se 7-1s-12w, Cypress 2068 ft, 208 bbls, 2431 ft.

Superior's Fearheilly 1, se ne ne 8-1s-12w, abnd 2177 ft.

Superior's Crow Comm 1, w½ nw nw 9-1s-12w, Biehl 1510 ft, 125 bbls, 2360 ft.

Bennett Bros.' Hinderliter-McVaigh 1, ne nw 11-1n-14w, Rosi 2862 ft, 524 bbls, 2922 ft.

Magnolia's Newkirk 1, ne se ne 34-1n-13w, McCl 2653 ft, 27 bbls, 2734 ft.

Wayne County: Buren McGregor's Fee 2, ne se 32-1s-7e, McCl 3281 ft, 44 bbls, 3281 ft.

Pure's Nunn 1, nw se nw 27-1s-8e, L. O'H 3145-52 ft, 219 bbls, 3192 ft.

Sinclair-Wyoming's Vogel 1, c se se 14-2s-6e, McCl 3310-21 ft, 220 bbls, 3321 ft.

National's Hill 2-A, se se 29-2s-9e, Aux Vases 3183 ft, 89 bbls, 3206 ft.

Texas Co.'s Boggs 6, c ne se 8-3s-7e, Aux Vases 3206-16 ft, 30 bbls, 3360 ft.

Pure's Keyser Cons 1, nw se 14-1n-8e, McCl 3088 ft, 311 bbls, 3110 ft.

White County: Eason's Clark 3, ne nw nw 30-4s-11e, Penn 1353-63 ft, 69 bbls, 1364 ft.

Wells Completed in United States in Week Ended September 11, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Arizona	....	....	....	....	....	....	....	....	4	4	4	....	4	2
Arkansas	1	....	....	....	1	....	....	....	1	1	2	2	150	159
California	24	2	....	....	26	....	....	....	4	4	30	23	1,101	521
Colorado	....	....	....	....	....	....	....	....	....	....	....	....	21	9
Florida	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Illinois	22	....	....	11	33	....	....	....	4	4	37	31	1,287	1,428
Indiana	1	1	....	2	4	....	....	....	2	2	6	4	173	277
Kansas	17	....	....	10	27	3	1	....	9	10	40	30	1,181	1,161
Kentucky	3	....	....	2	5	....	....	....	6	6	11	7	250	105
Louisiana	1	....	....	1	2	....	....	....	....	....	2	7	423	697
North Louisiana	1	....	....	....	1	....	....	....	....	....	1	2	180	.....
South Louisiana	....	....	....	1	1	....	....	....	....	....	1	5	243	.....
Michigan	5	2	....	3	10	....	2	....	5	7	17	13	401	488
Mississippi	....	....	....	....	....	....	....	....	....	....	....	....	34	83
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	17	21
Montana	....	....	....	....	....	....	....	....	....	....	....	....	156	143
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	.....	27
New Mexico	4	....	....	2	6	....	....	....	2	2	8	14	182	293
New York	8	....	5	....	13	....	....	....	....	....	13	22	823	874
Ohio	....	....	....	....	....	....	....	....	....	....	....	24	614	775
Oklahoma	7	1	....	15	23	3	1	....	6	7	33	36	961	1,039
Pennsylvania	32	5	18	....	55	....	....	....	....	....	55	55	1,908	2,862
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	6	8
Texas	48	3	....	18	69	2	....	2	17	19	90	70	2,855	4,078
E. Tex. Bor. Co.'s	....	....	....	....	....	....	....	....	....	....	....	....	16	.....
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	5	.....
Rest of E. Texas	3	....	....	....	3	....	....	....	....	....	3	....	152	.....
North Texas	10	....	....	5	15	1	....	....	3	3	19	11	691	.....
W. Central Texas	4	....	....	4	8	....	....	1	3	4	12	3	264	.....
West Texas	15	....	....	1	16	1	....	1	2	3	20	20	625	.....
Texas Panhandle	4	....	....	1	5	....	....	....	....	....	5	2	143	.....
G. Coast, Upper	3	....	....	2	5	....	....	....	2	2	7	7	225	.....
G. Coast, Lower	8	3	....	2	13	....	....	....	5	5	18	17	438	.....
Southwest Texas	1	....	....	3	4	....	....	....	2	2	6	8	256	.....
S. Central Texas	....	....	....	....	....	....	....	....	....	....	....	2	40	.....
West Virginia	1	6	....	4	11	....	....	....	....	....	11	17	445	524
Wyoming	....	....	....	....	....	....	....	....	....	....	....	....	85	69
Total U. S.	174	20	23	68	285	8	4	2	60	66	350	355	13,081	15,648

* Includes distillate wells. † Includes salt water disposal wells.

The OIL WEEKLY'S TRADING POST

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■ FOR SALE: 1—14 x 12 Gardner Denver Twin Cylinder-Piston Valve Type Roller Bearing complete enclosed oil bath-steam engine mounted on 10 x 12 H Beam steel skids with necessary cross members and braces 20 feet long with National steam separator and trap-force feed oil pump and 6" Badgett steam lubricator for dual oil system-3" Brown throttle valve-22 tooth dual drive split sprocket for 1240 double chain. All the above mounted in unit and completely piped and fitted for steam connection.

2—12 x 12 Oil Well Supply Twin Cylinder Steam Engines mounted-fitted and equipped same as above. Approximate HP 750.

None of these engines needs overhauling or repairs. They are ready to go.

1—OWS 9 x 9 x 9 Drawworks unit with hydromatic brake, double engine drive water cooled drum. Complete with guards and chains.

1—400-ton 8" Ideco swivel complete w/goose neck and lefthand bottom connections.

Other drilling equipment, also 3½" and 4½" O.D. drill pipe for sale. F. H. Brown, P. O. Box 331, Carmi, Illinois.

■ Drilling rigs for sale for cash; or on acceptable terms of credit.

1—Wilson Giant Diesel Rig, with two 225 HP Cummings Diesel Motors, compounded; 14" x 7¼" x 14" Gardner-Denver pump; heavy derrick and heavy equipment entirely suitable for 5500-foot drilling; with or without drill pipe.

1—Diesel Rig, with two 225 HP Cummings Diesel Motors, compounded; 8" Emsco H-46 unitized draw works, with roller bearing drum shaft; 14" x 7½" x 14" new Gumbo Buster pump, made part of one well only; heavy duty OCS clutch; heavy derrick, and everything else about the rig suitable for drilling to 7500 feet; with or without drill pipe.

1—Steam Rig, less drill pipe, with
- 3—125 HP 300-lb. WP Kewanee boilers.
- 2—14" x 7¼" x 18" Wilson Snyder mud pumps, unitized on same skid.
- 1—Unitized boiler feed pump unit, with two 10" x 4½" x 10" pumps.
- 1—12" x 12" Gumbo Buster roller bearing, fully enclosed engine.
- 1—25½" Gumbo Buster, fully enclosed oil bath rotary table.
- 1—9" Acme Unitized Draw Works.

Other items are generally complete, but there may be a few items short.

Both of the diesel rigs described above are now running and can be inspected on the job. Box AA1, c/o The Oil Weekly, Houston, Tex.

■ FOR SALE: Approximately 5000 feet of 4½" left-hand drill pipe; also 6" Kelly with connection for running same.

This drill pipe is made up in doubles of about 45 feet. All tool joints and collars have heavy welds.

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■ FOR SALE: 3 complete Power Rotary Drilling Rigs with approximately 7000 feet 3½" OD Drill Pipe and 12,000 feet of 4½" OD Drill Pipe. All Waukesha, Butane Equipped Motors and Gardner Denver 14 Pumps. These rigs are all running and in good condition. Box 331, Carmi, Illinois.

■ FOR SALE: 3975' of 5-9/16" regular API drill pipe, 1300' Hughes FH drill pipe. 1-3 speed Union Tool Drawworks. General Oil Tool Company, Burrton, Kansas.

■ FOR SALE: 2½-ton Studebaker truck with steel oil field bed, Tulsa winch and gin pole. Perfect condition. Earl Leech, Rockdale, Texas.

■ LUMBER FOR SALE: Douglas Fir oil field lumber and timbers up to 100 feet in length; also pine and hardwood timbers. E. J. Gaiennie, Box 1074, Shreveport, La.

■ FOR SALE: 6¾x12 Union Tool Mud Pump Unitized on one skid with two Mercury Fords, V-V Belt Drives with transmissions. Price $2000.00. U. S. Machine Shop, Electra, Texas.

FOR SALE

■ FOR SALE: One Fairbanks-Morse Type Z Style ZC-118 Oil Well Pumping Engine complete with air-cleaner Type J Clutch, Hand Shifter, Sheave and V-Belts.

One CK Waukesha 2½x3½ 4-cyl. Power Unit complete, Twin Disc Clutch Power Take Off, Sheave, V-Belts, Slide Rails. Reply Box 73, c/o The Oil Weekly, Houston, Texas.

HELP WANTED

■ WANTED: Men with geophysical experience, also mechanics, parts men, radio men and machinists. Independent Exploration Co., 901 Esperson Bldg., Houston, Texas.

WANTED TO BUY

■ WANTED:
- 1— 7" Cameron 6000-Lb. Test, Pressure Operated, Flow Line Valve
- 1—10¾" Cameron 6000-Lb. Test, Pressure Operated, Master Valve
- 1— 7" Cameron 6000-Lb. Test, Pressure Operated, Blowout Preventer.

We are interested in new or used equipment. Do not offer used equipment unless in perfect operating condition. Quote condition and price. Danciger Oil & Refining Company, Fort Worth, Texas, LD 142, G. B. Magruder, Jr.

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NOTICES

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P. O. Box 2608 Houston, Texas

1 Down • 2 to Go—Buy War Bonds

Baldwin Barrett et al's Parr-Poole 7-C, se se sw 12-6s-10e, Tar Springs 2190-2208 ft, 130 bbls, 2857 ft.

ILLINOIS WILDCATS

Cumberland County — Failure: Big Chief Drilling Co.'s Walk 1, sw se ne 8-9n-7e, abnd 2481 ft.

St. Clair County—Failure: Muller's Smiley 1, c nl sw nw 32-2n-7s, abnd 1990 ft.

Wayne County—Failure: Heath et al's Richardson 1, nw se 31-2s-5e, abnd 3215 ft.

White County—Failure: Skelly and Seaboard's Gilliham 1, sw nw ne 9-5s-9e, abnd 3416 ft.

INDIANA

Gibson County: R. D. Brown's Crecelius A-1, se sw nw 35-1s-10w, abnd 1956 ft.

Howard County: Grisell & Kriss' Arkson 2, ne ne nw 23-23n-13e, Trenton 932 ft, 50 gas, 1312 ft.

Posey County: Cherry & Kidd's Walgrove Corp. 8, ne ne nw 14-4s-14w, Cypress 2626 ft, 2 bbls, 2632 ft.

Carter's Jeffries 1, w½ ne nw 12-7s-14w, abnd 2047 ft.

INDIANA WILDCATS

Posey County—Failure: Lewis Prod. Co.'s Sussick 1, nw ne sw 27-7s-14w, abnd 2821 ft.

Spencer County—Failure: Savage et al's Rust 1, nw sw se 8-6s-4w, abnd 980 ft.

KANSAS

Barber County—Sun City: Pryor & Lockhart's Massey 1, c se ne¼ 27-30s-15w, Lans 3898 ft, 2500 gals acid, 100 bbls, 4523 ft.

Barton County: Black-Marshall's Seyfert 1, ne se ne¼ 36-16s-12w, abnd 3438 ft.

Butler County—Brandy-Sensebaugh: Adair & Morton's Courtney Ramp 4, se se nw 23-28s-7e, Miss 2745 ft, 4000 gals acid, 50 bbls, 2775 ft.

Ellis County—Madden: Paul McIntyre et al's Madden 1, c se sw 26-15s-18w, Arb 3524 ft, abnd 3564 ft.

Ellis County—Leiker: Darby's Strecklein 1, c ne sw 11-15s-18w, Arb 3650 ft, abnd 3661 ft.

Ellsworth County—Stoltenberg: Cities Service's Kralik A-5, Arb 3308 ft, 3000 gals acid, 312 bbls, 3335 ft.

Ellsworth County — Bloomer: Branine & Goering's Ehley 2, c sw se 30-17s-10w, Arb 3296 ft, abnd 3312 ft.

Harvey County—Graber: Morgan & Flynn's Lagree 1, ne se se 6-22s-1w, Simpson 3436 ft, abnd 3461 ft.

McPherson County—Henne: H & M Drilling's Spilman 1, c sw nw 16-17s-1w, Miss 2617 ft, 2000 gals acid, 3738 bbls, 2630 ft.

McPherson County — Lindsborg: Dickey's Liljestrand 1, c s½ sw 24-17s-4w, Viola 3414-19 ft, 2500 gals acid, 640 bbls, 3419 ft.

C. U. Bay's Lundstrum 1, c sw se 36-17s-4w, Viola 3381 ft, 1000 gals acid, 462 bbls, 3383 ft.

Phillips County—Ray: Cities Service's Steele 1, sw sw ne 27-5s-20w, Penn sand lime 3548, 2500 gals acid, 88 bbls, 3632 ft.

Pratt County—Stark: Transwestern's Moeller 1, c ne sw 7-26s-11w, Viola 4165 ft, abnd 4174 ft.

Pratt County — Carmi: Shell's Petrowsky B-2, sw nw se 30-26s-12w, Arb 4286 ft, 1000 gals acid, 63 bbls, 4316 ft.

Reno County—Zenith: Shell's Paine 1, c nw nw 5-24s-10w, Viola 3646 ft, 1000 gals acid, 44 bbls, 3717 ft.

Landon's Union Cent Life 9, c ne ne 7-24s-10w, Viola 3754 ft, 3000 gals acid, 9 bbls, 3760 ft.

Rice County—Brandenstein: Hollow et al's Gill 1, c sw ne 15-19s-10w, Arb 3290 ft, abnd 3315 ft.

Rice County—Silica: Phillips' Kropf 2, c sw sw 36-19s-10w, Arb 3296 ft, abnd 3555 ft.

Rooks County—Barry: Continental's Barry A-3, ne nw se 2-9s-19w, Arb 3430 ft, 2700 fto, echo test infinity, 3443 ft.

Russell County—West Greenvale: c ne sw 29-14s-12w, Arb 3159 ft, abnd 3185 ft.

Russell County—Witt: Witt's Fee C-6, sw sw nw¼ 3-14s-14w, Lans 2981 ft, 5000 gals acid, 400 bbls, 3007 ft.

Russell County—Gorham: Coralena's Foster-Aley 1, c se nw 9-14s-15w, Lans 3021 ft, 2000 gals acid, 211 bbls, 3102 ft.

Russell County—Trapp: Ohio's Maier 2, c sw sw¼ 10-15s-14w, Arb 3226 ft, 1000 gals acid, 499 bbls, 3235 ft.

Saline County—Hunter: Wolf Creek's Tressing 1, ne se sw 9-16s-1w, abnd 2654 ft.

Stafford County—Rothgarm: Atlantic's Michaux 1, c ne nw 15-21s-13w, Arb 3601 ft, 2100 gals acid, 106 bbls, 3606 ft.

Stafford County—Gates: Magnolia's Mattie Gates 4, c se ne¼ 34-21s-13w, Arb 3675 ft, 190 bbls, 3680 ft.

Stafford County—Van Lieu: Stanolind and Derby's Beckerdite 2, c nw nw¼ 21-24s-13w, Arb 4069 ft, 1000 gals acid, 9 bbls, 4076 ft.

KANSAS WELLS DEEPENED

Barton County — Kraft Prusa: Aylward Prod.'s Harzman 1, c nw sw 33-16s-11w, ow workover, Lans 3056 ft, 54 bbls, otd 3354 ft.

Cowley County—Rahn: Jack Garden's Rahn 2, nw se nw¼ 13-34s-5e, otd 2945 ft, shot 70 qts, 710 bbls, 2950 ft.

Stafford County—Freford: British American's Heyen 2, 28-23s-12w, otd 3851 ft, water input, 4140 ft.

KANSAS WILDCATS

Cowley County—Failure: Northern Ordnance's Lewis 1, nw ne sw 36-31s-5e, abnd 3120 ft.

Ellis County—Failure: Phillips' Gaschler 1, nec 23-12s-20w, Arb 3935 ft, abnd 3965 ft.

Marion County—Failure: National Refining Co.'s Hawks 1, nwc se 17-19w-4e, abnd 2758 ft.

Pratt County—Failure: Cities Service's McGuire 1, swc 24-27s-13w, Arb 4431 ft, abnd 4461 ft.

Rice County—Failure: Falcon, Seaboard and Harbar's Blackhall 1, c w½ sw se 7-21s-8w, Arb 3607 ft, abnd 3640 ft.

Phillips' Fair 1, ne se ne 16-21s-9w, Arb 3516 ft, abnd 3546 ft.

Texon's Millard 1, se sw se 10-20s-7w, Arb 3601 ft, abnd 3616 ft.

Rooks County—Failure: National Assoc's Riley 1, se ne ne 16-6s-17w, Arb 3612 ft, abnd 3666 ft.

Russell County—Failure: Republic Natural Gas Co.'s Anschutz 1, nwc 35-14s-11w, Arb 3202 ft, abnd 3226 ft.

Stafford County — Discovery: Stanolind's Hewitt 1, sec sw 4-21s-12w, Lans 3244 ft, Arb 3460-3463 ft, 4000 gals acid, pot 388 bbls.

KENTUCKY

Henderson County: Carter's Heck 1, 18-O-23, abnd 2756 ft.

Carter's Denton 6, 22-O-23, McCl 2552 and 2590 ft, 101 bbls, 2597 ft.

McLean County: Miller & Schiarella's McEvan 1, 11-N-27, Bethal 1850 ft, 20 bbls, 1881 ft.

Union County: Carter's O'Nan 2, 12-O-19, Mans 1432 ft, 23 bbls, 1443 ft.

Ohio's Chancellor 1, 9-O-20, abnd 2604 ft.

KENTUCKY WILDCATS

Hancock County—Failure: White's Hancock Land Co. 1, 20-P-34, abnd 669 ft.

Henderson County—Failure: Cherry & Kidd and Ashland's Starkey 1, ne se nw 1-Q-23, abnd 2540 ft.

Ohio County—Failure: Tom Galey and Ashland's Kirk 1, 16-M-31, abnd 1017 ft.

Rowan County—Failure: Gulf's Lee Clay Prod. 2, ne nw sw se 15-T-74, abnd 740 ft.

Union County—Failure: Mar-Hill's Anderson 1, 19-O-19, abnd 1501 ft.

Webster County—Failure: So. Pet.'s Oglesby 1, 13-N-23, abnd 2797 ft.

NORTH LOUISIANA

Claiborne Parish — Haynesville: Midstates Oil Corp.'s Lewis 1, 28-23n-8w, flow 408 bbls, ½-in, 5658 ft.

SOUTH LOUISIANA

Calcasieu Parish: Union Sulphur Co.'s Ulrich 6, 19-9s-10w, Sulphur Mines, abnd 7841 ft.

MICHIGAN

Arenac County—Deep River: Arenac Oil & Gas Co.'s Goodroe 1, c se 18-19n-4e, abnd 1525 ft.

Clare County—Cranberry Lake: Taggart Bros. Co.'s S16, c nw 6-20n-5w, 3,600,000 gas 1310 ft.

Taggart Bros. Co.'s S18, c nw 7-20n-5w, 1,100,000 gas, td 1367 ft.

Clare County—Winterfield: Sun's Goodrich 1, e½ se sw 32-20n-6w, Traverse lime, pump 15 bbls from 3127-45 ft, td 5123 ft.

Mecosta County—Fork: Smith Petroleum Co.'s Compson 1, s½ ne se 6-16n-7w, Dundee lime, flow 82 bbls, 3804 ft.

Smith Petroleum Co.'s Winchester 1, ne sw ne 7-16n-7o, Dundee lime, flow 131 bbls 2 hrs, potential 900 bbls, 3866 ft.

Newaygo County—Goodwell: Pure's Troeger 1, e½ se ne 8-14n-11w, Traverse lime, flow 388 bbls, after 500 gals acid, 2840 ft.

Osceola County—Rose Lake: Sun's Bowman 2, e½ se ne 6-18n-9w, abnd 3252 ft.

Sohio Producing Co.'s Bowker 1, s½ se se 31-19n-9w, Traverse lime, flow 979 bbls 22 hrs, td 3181 ft.

Ottawa County—South Zeeland: C. A. Perry's Prins 2, nw se ne 31-5n-14w, abnd 1511 ft.

MICHIGAN WILDCATS

Arenac County — Failure: Ervin Major's Pula 1, c nw ne 19-18n-4e, Dundee 2794 ft, abnd 3043 ft.

C. W. Teater's Buffalo Land 1, s½ se se 23-18n-4e, Dundee 2690 ft, abnd 4232 ft.

Clare County—North Winterfield Discovery: Leonard and Rowmor's Miltner 1, s½ sw se 1-20n-6w, Traverse 3170 ft, gas 3173-97 ft, Dundee 3834 ft, pay 3835-40 ft, flow 112 bbls 76 hrs, acidized 150 gals, swab and pump average 55 bbls oil and 20 to 32 bbls water per 24 hrs, td 3840 ft.

Isabella County—Failure: Gordon Oil Co.'s Gingrich 1, w½ nw ne 7-15n-6w, Dundee 3700 ft, abnd 3778 ft.

Mecosta County—Failure: Gordon Oil Co. and Carter Oil Co.'s Brush 1, c ne se 14-15n-8w, Dundee 3777 ft, abnd 3815 ft.

Montcalm County—Douglass Gas Field Discovery: American Production Co.'s Bentley 1, se se ne 28-11n-7w, Stray sand 1188 ft, 4,000,000 gas, td 1197 ft.

Osceola County—Evart: Sun Oil Co.'s Pierson 1, n½ ne sw 29-18n-8w, 1¼ mi w Evart oil-gas field, Dundee 3797 ft, abnd 3891 ft.

NEW MEXICO

Eddy County: Burnham Oil Co.'s State 1, c sw nw 2-17s-30e, flow 200 bbls, 2-in, 2910-60 ft.

Penn-Surgical et al's Ballard 1, ne nw sw 8-18s-29e, flow 82 bbls, 2-in, shot 200 qts 2443-90 ft, td 2523 ft, pb to 2505 ft.

H. G. Eastman Jr. et al's Hargrove 3, 510 ft nsl and 660 ft ewl 10-20s-30e, pump 90 bbls oil, 460 water, acid 1000 gals 1606-32 ft, td 1733 ft, pb to 1632 ft.

Penman & Hover's State-Hover 1, ne ne nw 29-20s-30e, elev 3366 ft, salt 541-1415 ft, abnd 1802 ft.

Premier Pet. Corp.'s Arnold 1-D, c se nw 27-17s-30e, flow 9 bbls, 2-in, shot 790 qts 3160-3205 ft, td 3622 ft, pb to 3210 ft.

Harvey E. Yates et al's State 1, c nw ne 16-19s-30e, elev 3367 ft, abnd 1960 ft.

NEW MEXICO WILDCATS

Grant County — Failure: Winninger Bros. and R. D. Berry's State 1, 1600 ft nsl and 850 ft wel 16-27s-16w, abnd 1500 ft.

San Juan County—Failure: Nick Notterman et al's Crawford 1, ne se nw, abnd 990 ft.

OKLAHOMA

Caddo County—Cement: Gulf's Sherritt 1, se nw ne¼ 33-6n-10w, Medrano 5770 ft, 329 bbls, 6045 ft.

Carter County — Tussy: Allied Materials' Bridenthal 1, sw sw ne¼ 9-1s-3w, sand 2792-2821 ft, 3,000,000 gas, 10 bbls oil, 2856 ft.

Comanche County—Fort Sill: State School Land's 2, ne nw ne¼ 16-3n-10w, abnd 1106 ft.

Creek County: Gulf's Barnes 24, c n½ sw 8-17n-12e, Glenn 1456-1624 ft, td 1626 ft, comp.

Haskell County—Brooken: Grimm's Hachey 1, c nw sw 10-9n-18e, abnd 2025 ft.

Hughes County—Holdenville: Crum & Bart-

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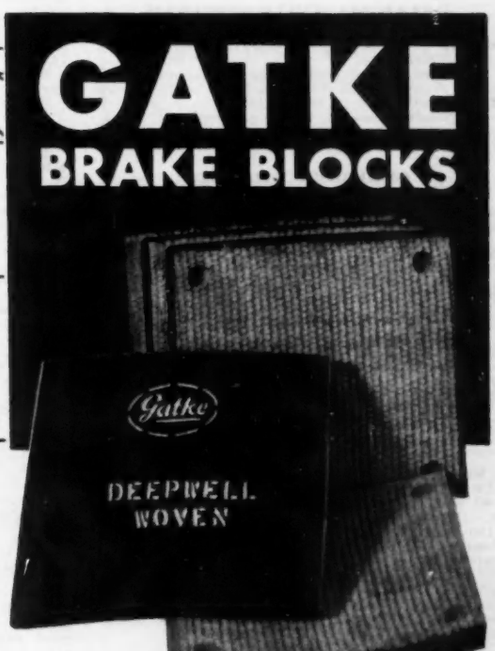

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lett's Turner 1, Booch 2968 ft, abnd 3010 ft.

Lincoln County—Cessman: S. B. Logan's Barry 1, ne sw nw 4-13n-4e, abnd 60 ft.

Lincoln County—Sporn: Wood & Haddock's Fox 1-A, se se nw 21-17n-3e, abnd 4636 ft.

Logan County—Meridian: Jordan's Hatcher 1, se se sw 22-16n-1e, Viola 5226 ft, abnd 5227 ft.

Noble County—Otoe City: Superior's Williams 1, ne sw sw 13-22n-1e, Layton 3191 ft, shot 80 qts, 61 bbls, 3218 ft.

Superior's Gilham 2, ne sw sw 14-22n-1e, Layton 3272 ft, abnd 3258 ft.

Okfuskee County—NE Dill: Mid-Continent's Wotke-Yahola 1, c se sw 18-12n-9e, Pitkin 3538 ft, abnd 3565 ft.

Oklahoma County — Oklahoma City: Cities Service's Levy 1, se sw nw 22-12n-3w, Wilcox 6444 ft, shot 260 qts, 80 bbls, 6527 ft.

Okmulgee County—Gypsy Hill: Oklahoma Oil's Lasky 6-A, nw nw ne 17-13n-11e, abnd 485 ft.

Osage County—Happy Hollow: Penny's 9, nw sw sw 15-24n-8e, shot 40 qts, abnd 536 ft.

Osage County—Hickory Creek: Veeder Supply Co.'s 1, se ne se 32-29n-12e, abnd 1771 ft.

Payne County — March: Home Gas Co.'s Lamson 1, se ne se 32-18n-5e, Bartles 3553 ft, shot 40 qts, 78 bbls, 3567 ft.

Seminole County — Wewoka: Deep Rock's Varnum 1, nw se sw 16-8n-8e, abnd 3229 ft.

Seminole County—E. Seminole: Varco's Boring 1, Senora 2657 ft, abnd 2681 ft.

Stephens County—Velma: Baker's O'Bannon 5, se se nw 22-1s-5w, sand 390-40 ft, shot 5 qts, 4 bbls, 404 ft.

Skelly's Dickerson 1, sw se nw¼ 25-1s-5w, Sandy lime 1524-31 ft, shot 100 qts, 100 bbls, 1560 ft.

Stephens County—Empire: McAllister's Perrit-Trout 3, nw ne sw 1-2s-8w, abnd 1485 ft.

OKLAHOMA WELLS DEEPENED

Creek County: Sinclair Prairie's Berryhill 7, nw nw nw 16-17n-12e, otd 1512 ft, shot 50 qts, 10 bbls, 1581 ft.

McClain County—Byars: Anderson-Prichard's Willy 1, c ne ne 28-5n-3e, Second Wilcox 4078 ft, otd 3636 ft, abnd 4100 ft.

Stephens County: Skelly's Stephens 1, sw nw ne¼ 36-1s-5w, otd 2017 ft, Sandy lime 1340-56 ft, 1000 gals acid, 28 bbls, 3838 ft.

OKLAHOMA WILDCATS

Kay County—Failure: Sinclair Prairie's Cannon 1, c n½ sw sw 7-26n-1e, Wilcox 4118 ft, abnd 4133 ft.

Logan County—Failure: Danciger and Snowden & McSweeney's McPeek 1, se se ne 18-18n-3w, abnd 6424 ft.

Noble County—Failure: Ellison's Eyler 1, se ne sw 10-21n-2e, abnd 4460 ft.

Deep Rock's Atkins 1, nw nw se 25-23n-1e, abnd 4750 ft.

Pawnee County—Failure: Aladdin Oil Co.'s Martin 1, se sw nw 5-22n-5e, abnd 3795 ft.

Seminole County—Discovery: J. E. Hall's Vierson 1, ne ne sw 7-6n-7e, perf 1551 ft, Senora 1973 ft, 7 bbls.

Winona Oil Co.'s Tiger 1, se sw nw 24-10n-7e, abnd 4457 ft.

EAST TEXAS

Camp County—Pittsburg: Harry S. Moss et al's Venters & Lockett (Magnolia) 1-B, 660 ft ewl and 610 ft snl Robt. Wyers sur, elev 386 ft, Georgetown 4535 ft, massive anhydrite 7190-7348 ft, Pettit porosity 7990 ft, Travis Peak 8137 ft, flow 132 bbls 42-gr, flow valves, perf 7992-8020 and 8064-99 ft, td 8140 ft.

Wood County—Hawkins: Humble's E. Dagnell 5, 1590 ft snl and 2300 ft wel W. Parker sur, Woodbine 4142 ft, flow 356 bbls, ¼-in, perf 4587-95 and 4615-20 ft, td 4684 ft.

Wood County — Quitman: Amerada and Gulf's White 4, 467 ft ewl and 523 ft snl of 37.57-ac tr, J. Robbins sur, Paluxy 6238 ft, flow 688 bbls, ¼-in, perf 6248-6324 ft, td 6334 ft.

NORTH TEXAS

Archer County: W. E. Production Co.'s Anderson 5, 330 ft out swc ne sec 8, Meade Pasture sur, abnd 1470 ft.

White & Duncan's Richardson 7, 250 ft nsl and 635 ft ewl W. C. McCune sur, A 943, pump 34 bbls, sand 1230-36 ft.

White & Duncan's Richardson 9, 830 ft wel and 640 ft nsl MEP&P, A 715, pump 19 bbls, sand 1242-46 ft.

White & Duncan's Richardson 10, 1140 ft nsl and 830 ft wel MEP&P, pump 30 bbls, sand 1225-35 ft.

White & Duncan's Richardson 11, 1640 ft nsl and 830 ft wel MEP&P, pump 23 bbls, sand 1230-35 ft.

Baylor County — Seymour: British-American's Turbville 16, ne sw nw T&NO 197, pump 100 bbls oil, 30 water, acid 2000 gals, Palo Pinto 2501-06 ft.

Clay County: Geo. Golden et al's Roop 2-B, 200 ft from sw and 1100 ft from se lines blk 10, Thornberry sur, pump 10 bbls, sand 1101-11 ft.

Perkins & Cullum's Taylor 2-C, 180 ft from nw and 550 ft from sw lines blk 43, Bacon sur, pump 50 bbls, sand 1068-86 ft.

Perkins-Cullum's Taylor 3-C, 150 ft from nw and 700 ft from nw lines blk 43, Bacon sur, pump 10 bbls, sand 1085-93 ft.

Cooke County: Benson Bros. & Dennis' Cooke-Texaco 2, 2120 ft wel and 1850 ft nsl of A. Patterson sur, A 817, abnd 1161 ft.

Wichita County: Akin-Dimock-Norwood & Wood's Stine 1, 1900 ft wel and 2200 ft nsl H. Hastie sur, abnd 1351 ft.

Akin-Dimock-Norwood & Wood's Katie Weibner 1-B, 1050 ft snl and 990 ft ewl J. Aldridge sur, abnd 1352 ft.

Bell O&G Co.'s Cropper 12-B, 775 ft ewl and 900 ft nsl C. Winters sur, pump 60 bbls, sand 1363-68 ft, td 1374 ft.

Cochran & Cain's Waggoner 4-A, 920 ft nsl and 2490 ft ewl HT&B 14, pump 9 bbls, 1848-72 ft.

Wilbarger County: Rogers Bros. Drl. Co.'s McCrary 3, H&TC 64, blk 14, abnd 1992 ft.

NORTH TEXAS WELL DEEPENED

Wilbarger County: Phillips' Waggoner Est. 168, 660 ft snl and 200 ft ewl ne ne H&TC 43, blk 4, otd 1918 ft, Ellenburger 3837 ft, pump 80 bbls oil, 433 water, acid 500 gals 3834-40 ft.

TEXAS GULF COAST

Brazoria County — West Columbia: Texas Co.'s Abrams 47, Geo. Tennille Lge, perf 5360-70 ft, flow 551 bbls, ¼-in, tp 400 lbs, td 5525 ft.

Ft. Bend County—Clodine: Stanolind's Cinco Ranch 4, John Brock sur, abnd 7550 ft.

Liberty County: Gulf's Hinz 1, GC&SF sur, A-457, abnd 9942 ft.

San Jacinto County—Mercy: Shell's Robinson et al 1, Unit 3 James Robinson sur, 5½-in 8297 ft, sand 8299 ft, flow 165 bbls, ½-in, gor 952-1, td 8313 ft.

Tyler County—Fred: Stanolind's Parker et al 3, G. T. W. Collins Lge, 5½-in 8712 ft, flow 122 bbls, 8970 ft.

TEXAS GULF COAST WILDCATS

Ft. Bend County: Hawley's Morrow et al 1, se Katy field, John McKnight sur, abnd 7617 ft.

Wharton County: Coffee's Kountze 1, M&C sur, 8 mi s Louise, abnd 6500 ft.

Stanolind's Wendel 1, Wm Kincheloe sur, 3 mi se Glen Flora, abnd, 6000 ft.

LOWER TEXAS GULF COAST

Bee County—Blanconia: Pure's Tuttle 1, Michael O'Donnell sur, 5½-in 5058 ft, pb 4938 ft, perf, 4933-38 ft, 1,400,000 gas, 5/32-in, 1860 lbs wp, td 5605 ft.

Jackson County—West Ranch: Magnolia's West Ranch 249-A, Ramon Musquez grant, perf 5598-5600 ft, flow 101 bbls, 7/64-in, gor 345-1, tp, 525 lbs, cp 625 lbs, td 5607 ft.

Magnolia's West Ranch 251-A, Ramon Musquez grant, perf 5746 ft, flow 130 bbls, 7/64-in, gor 531-1, tp 835 lbs, cp 900 lbs.

Jackson County—Collier-New Pay Discovery: Sun's Classen 3, Jas. Kerr sur, perf 2289 ft, 3,000,000 gas, 3/16-in, 690 lbs wp, 1000 lbs sip, td 2502 ft.

Jim Wells County—Quinto Creek Outpost: Sun's Wiechring 1, Casa Blanca grant, 5½-in, 5142 ft, perf 5120-32 ft, 305,000,000 gas open flow, spray distl.

Jim Wells County—North Magnolia City Outpost: Humble's Adams Estate 2, Marcelino Lopez "Los Presenos" grant, abnd 6004 ft.

Jim Wells County — Seeligson: Transwestern's Hewitt 1, Richard Ross sur, 334, A 406, dual completion, Zone 13, perf 4875-80, flow 119 bbls, ⅛-in, gor 498-1, wp 600 lbs, pkr 5932 ft; Zone 19, perf 5985-90, flow 103 bbls, 3/32-in, wp 1100 lbs, flwg thru tubing, gor 663-1, td 6251 ft.

Karnes County: Blanco Oil Co and Buchanan's Carlson 1, 2½ mi w Green, abnd 6264 ft.

Kleberg County—Stratton: Humble's King Ranch-Paso Ancho 27, Santa Gertrudis grant, perf 6992-7002 ft, flow 210 bbls, ⅛-in, tp 1700 lbs, gor 1124-1, td 7002 ft.

Nueces County—Agua Dulce: Chicago Corp.'s Ingram 1, rework job of old Process Oil Co.'s Ingram 1, dry hole, Ross Peters sbdn Puenticitas grant, dual completion, upper sand perf 4840-55, 28,000,000 gas, open flow, 14⅓ bbls distl per mil ft gas, sip 1850 lbs; lower sand perf 5056-94 ft, 56,000,000 ft gas, open flow, 18-1/3 bbls distl per mil ft gas, sip 1700 lbs, td 5325 ft.

Ginther's Carver 1, sec 86, Paul sbdn Driscoll Ranch, perf 6706-44, 70,000,000 ft gas, 25 bbls distl per mil ft gas, td 6905 ft.

Nueces County — Stratton: Chicago Corp.'s Wardner 58, perf 6351-57 ft, flow 45.9 bbls oil, 92 wtr, 3/16-in, gor 770-1, tp 480 lbs, cp 1520 lbs, td 7493 ft.

Nueces County—Agua Dulce: Gulf Plains Corp.'s Horne 1, W. W. Chapman sbdn, deepening job, old Texon Roy Co.'s Horne 1, dual sand completion, upper sand perf 6855-70 ft, 28,000,000 ft gas, open flow, 23.8 bbls distl per mil ft gas, sip 2150 ft; lower sand perf 6925-33 ft, 10,800,000 ft gas, open flow, 19⅓ bbls distl per mil ft gas, sip 2550 ft, td 7010 ft.

Richardson Petroleum Co.'s Beatty 2, Bishop sbdn, Palo Alto grant, abnd 6898 ft.

Sun's Harlan 1, dual completion, Bishop sbdn Brayton Tract, Palo Alto grant, re-work job, perf upper sand 7076-79 ft, flow 104 bbls, 7/64-in, 825 lbs wp; lower sand, perf 7091-94, flow 131 bbls, 7/64-in, gor 750-1, tp 100 lbs, cp 1400 lbs, td 7094 ft.

San Patricio County—Odem: Seaboard Oil Co.'s Burrows 5, sand 5440 ft, perf 5442-47 ft, flow 125 bbls, ½-in, gor 1139-1, tp 1075 lbs, td 5005 ft.

LOWER TEXAS GULF COAST WILDCATS

Bee County: Hewitt-Dougherty and Rowe's O'Connor 1, 5 mi n Skidmore, Phoebe Crain sur, abnd 5186 ft.

Jackson County: British-American Oil Prod. Co.'s Four-Way Ranch 1, I&GN sur, ½-mi n-ne Lolita field, abnd 6517 ft.

Humble's Hensley et al 1, 7 mi s Lolita, 3 mi se West Ranch field, abnd 9100 ft.

San Patricio County: Boykin's Jones 1, 3½ mi se Taft, 1 mi sw of main Midway field prod, abnd 6705 ft.

Victoria County: Neilson & Fly's Ragsdale 1, 4 mi e Telferner field, 5½ mi se Inez, abnd 6767 ft.

SOUTHWEST TEXAS

Duval County—Conoco Driscoll: Continental's Driscoll 21-B, SK&K 446, abnd 3378 ft.

Jim Hogg County—Yaeger: Humble's Hellen 2, Ynojosa "Noriacitas" grant, abnd 3808 ft.

Massingill et al's Yaeger 4, TTRR 225, abnd 3741 ft.

Starr County—Cameron: Continental's Cameron 1, discovery, 1¾ mi n-ne Rincon field, 7-in 5005 ft, flow 225 bbls, 3/16-in, tp 600 lbs, cp 1100 lbs, gor 700-1, td 5005 ft.

Continental's Slick 1, Rincon field, CCSD&RGNG 573, perf 3830-48 ft, 1,110,000 gas with dist spray, 3/16-in, tp 1480 lbs, cp 1560 lbs, td, 4300 ft.

Sun Montalvo et al's 1-D, North Sun field, Juan Jose Sais "Los Retachez" grant, flow 132 bbls, 3/16-in, tp 240 lbs, cp 1010 lbs, gor 596-1, td 4923 ft.

SOUTHWEST TEXAS WILDCATS

Duval County: Magnolia's Hahl 12-A, North Govt. Wells, J. Poitevent sur 51, abnd 5416 ft.

Starr County: Stephens Gonzalez et al 1, Sacatosa area, 1 mi s Sacatosa gas field discovery, Jose Antonio Guajardo grant 111, deepening job, otd 1756 ft, abnd 2248 ft.

WEST CENTRAL TEXAS

Callahan County: Great Lakes Carbon Corp.'s Irvin 1, 330 ft out sec ne G. W. Denton sur, 349, elev 1970 ft, abnd 3421 ft.

Coleman County — Novice: States Oil Corp.'s Morris 13, 990 ft ewl and 1350 ft nsl J. R. Clements sur 141, flow 70 bbls, 5/64-in, shot 30 qts 3605-20 ft, td 3624 ft.

Coleman County—Rock Crushers: R. E. Foster-Angelo Lucido's Smith 1, 330 ft out sec N. B. Waters sur 679, abnd 3339 ft.

Jones County—Patterson: Fain & McGaha Unit Members' Patterson 1-B, 330 ft nsl and 1700 ft wel T&P 3, blk 17, elev 1751 ft, abnd 2327 ft.

Jones County—Wimberly: Butler-Horne Dr. Co. and Rice's Church 2, 330 ft out nwc blk 88, DeWitt CSL, dual completion, flow 696 bbls, ¼-in, acid 3000 gals 2272-2320 ft; flow 768 bbls, ¾-in, acid 1000 gals in lower pay 2463-2514 ft.

Shackelford County: J. F. Baker et al's Davis 4, 660 ft wel T&P 17, blk 14, and 800 ft sw No. 5, abnd 1555 ft.

Roeser-Pendleton-Continental's Cook 9-A-118, 1725 ft snl and 1020 ft wel E T 118, pump 93 bbls, sand 1653-55 ft, td 1658 ft.

Taylor County—Merkel: Fain & McGaha's Perry 3, 1130 ft snl and 330 ft wel of w-57½-ac of blk 5, Grimes CSL sur, pump 184 bbls, acid 1000 gals 2593-2625 ft.

WEST CENTRAL TEXAS WILDCATS

Brown County—Failures: Julian E. Simon and Groginsky's Stell 1, 1375 ft wel and 2000 ft nsl BBB&C 32, abnd 939 ft.

D. H. Brock et al's Rice 1, 4155 ft snl and 770 ft wel blk 22, Chas. Messer sur 127, abnd 1047 ft.

Jones County—Failures: Harold G. Neely et al's Calvert 1, 330 ft out swc 71-ac tr, G. Martinez sur 195, abnd 2310 ft.

Shackelford County—Gas Discovery: Chas. J. Kleiner et al's Morris 2-B, sw se sw ET 166, 1,800,000 gas, sand 1490-96 and 1498-1501 ft.

WEST TEXAS

Andrews County—Deep Rock: Lario O&G Co.'s (was Tripplehorn) Hayden-Miles 1, c nw nw PSL 12, blk A-46, pump 18 bbls, acid 7500 gals and shot 680 qts 4335-4480 ft.

Andrews County—Embar-Ellenburger: Phillips' University-Andrews 42, c nw se sec 30, blk 10, flow 868 bbls, ½-in, acid 1000 gals, pay 7950-8033 ft, td 8050 ft.

Cochran County—Slaughter: Devonian Oil Co.'s Duggan 23-B, 510 ft out nwc lab 16, leag 55, Oldham CSL, flow 938 bbls, 2½-in, acid 12,000 gals 4994-5040 ft.

Devonian et al's Duggan 5-C, 510 ft out sec lab 10, leag 54, Oldham CSL, flow 1156 bbls, 2½-in, acid 12,000 gals 5046-86 ft.

Crane County — Sand Hills: Lario O&G Co.'s Tubb-Humble 3, c se se PSL 5, blk B-32, flow 851 bbls, 40/64-in, acid 5500 gals, perf 4277-4433 ft, td 4451 ft.

Ector County—North Cowden: Stanolind's Midland Farms 2, Unit 4, 1765 ft nsl and 2048 ft ewl G&MMB&A 46, blk 42, T-1-N, pump 201 bbls oil, 127 water, shot 575 qts 4560-4790 ft, td 4800 ft.

Hockley County—Slaughter: T. F. Morrow

et al's Mallet 39, 580 ft out nec lab 10, leag 48, Edwards CSL, flow 684 bbls, acid 10,000 gals 4860-4903 ft.

Stanolind's Martin 3, 440 ft snl and 1106 ft ewl lab 14, leag 42, Rains CSL, flow 558 bbls, 2-in, acid 8500 gals 4895-4952 ft.

T.P. Coal & Oil Co.'s Rains 5, 580 ft out nwc lab 5, leag 42, Rains CSL, flow 980 bbls, 2-in, acid 10,000 gals 4880-4914 ft.

Howard County — Vincent: Cosden Pet. Corp.'s Jones 1, c nw nw H&TC 5, blk 25, elev 2326 ft, abnd 4407 ft.

Howard County—Iatan-East Howard: M. & M. Production Co.'s Davis-Hall 1, sw sw se T&P 44, blk 30, T-1-N, pump 152 bbls, acid 5000 gals 2523-2736 ft.

Pecos County—Taylor-Link: Cardinal Oil Co.'s University 2-F, 330 ft snl and 937 ft ewl sec 24, blk 16, flow 36 bbls, 1-in, shot 40 qts 1825-47 ft.

Pecos County—White-Baker: Cardinal Oil Co.'s White-Baker 4-C, 2395 ft nsl and 990 ft ewl TC 44, blk Z, pump 40 bbls oil, 4 water, acid 4000 gals 1802-57 ft.

Terry County—Slaughter: Honolulu's Devitt 4, 1650 ft out nwc C&M 4, blk D-11, flow 384 bbls, 2½-in, acid 10,000 gals 5020-40 ft.

Winkler County—Emperor: Skelly's Halley 60, ne nw se PSL 13, blk B-12, flow 1045 bbls, ¾-in, shot 318 qts 2715-2880 ft.

Yoakum County — Waples-Platter: Shell's Waples-Platter 2, c nw nw sec 616, flow 110 bbls oil, 10 bs&w, 2-in, acid 10,000 gals 5250-5303 ft.

WEST TEXAS WELL DEEPENED

Ward County: Sid Richardson et al's Johnson 5-A, 330 ft from nw and 1650 ft from sw lines H&TC 24, blk 34, otd 2921 ft, flow 6 bbls, gas lift, shot 140 qts 2930-78 ft, td 3083 ft, pb to 2980 ft.

WEST TEXAS WILDCATS

Crockett County—Olson—New and Upper Pay: Plymouth Oil Co.'s Shannon 2-M, 330 ft out nec of sw-200 of sw-800 ac leag 1, Archer CSL, elev 2461 ft, Yates 1040 ft, lime 1902 ft, 14,000,000 gas, perf 1790-1800 ft, td 2082 ft, pb to 1928 ft.

Dawson County—Failure: Darby Pet. Co.'s Harris 1, 440 ft out swc lab 16, leag 268, Moore CSL, elev 2944 ft, anhydrite 1960 ft, Yates sand 2750 ft, Grayburg 4240 ft, San Andres 4570 ft, abnd 5512 ft.

Sterling County—Failure: Robt. L. Cannon-B. C. Mann's Foster 1, c ne ne H&TC 4, blk 21, elev 2515 ft, Yates sand 1115 ft, brown lime 1138 ft, abnd 2903 ft.

TEXAS PANHANDLE

Gray County: Cities Service's Sheilds 10, se se nw I&GN 151, blk 3, pump 78 bbls, shot 160 qts 3131-3257 ft.

Hagy-Harrington-March's Herber 2, c se ne H&GN 184, blk B-2, elev 3231 ft, abnd 3087 ft.

Texas Co.'s Benedict 6, 2089 ft snl and 557 ft ewl lse, H&GN 55, blk B-2, pump 335 bbls, shot 480 qts 2910-3001 ft.

Hutchinson County: Gulf and Panhandle's Dial 113, 2480 ft snl and 1307 ft ewl GC&SF 90, blk Z, pump 129 bbls, shot 480 qts 2975-3130 ft, td 3140 ft.

Panhandle Producing Co.'s Carver 3-B, 1980 ft snl and 330 ft wel sec 25, but in sec 34, blk 4, Wm. Neil sur, pump 110 bbls, acid 1000 gals 3210-43 ft.

United States Wildcat Starts

ARKANSAS

Calhoun County: Placid Oil Co.'s Calion 1, c sw sw 12-16s-14w, lcn.

CALIFORNIA

Kern County: Tide Water Associated's KCL 54-6, sw sw ne 6-29-27, Fruitvale area, grading.

Tide Water Associated's Corehole 84-35, se se ne 35-21-26, Porterville area, rig.

Union's Kernco 81-8, 8-29-25, Rio Bravo area, lcn.

Orange County: Signal Oil & Gas Co.'s Banning 2, 609 ft n 266 ft e nwc Tr 772, rig.

ILLINOIS

Clark County: W. H. Wright's Hight 1, w½ nw ne 32-9n-14w, dr.

Montgomery County: Schneider's Walcher 1, sw sw se 16-9n-3n, lcn.

Wabash County: Hayes & Wolfe's Calverley 1, ne ne sw 15-1s-13w, dr.

White County: Smokey Oil Co.'s Delap 1, se sw ne 8-7s-8e, dr.

INDIANA

Pike County: Graham's Thos. Stove 1, c se se 9-1n-7w, lcn.

Wabash County: Barrett's Butt 1, Godfrey Res. 14-27n-5e, lcn.

KANSAS

Barber County: Dickey's Mills 1, c se sw 32-31s-14w, c & p.

Barbara Oil Co.'s Angell-Ohio 1, c nw 30-33s-13w, dr 300 ft.

Cowley County: Nat'l Assoc's Billiter 1, c w½ sw se 16-30s-5e, mim.

Leavenworth County: Hart's Spillman 1, c sw sw 25-11s-22e, sd 357 ft.

Workman's Hoffine 1, c ne se 11-12w-22e, rum.

McPherson County: Adair & Morton's Paden 1, swc se 10-18s-1w, lcn.

Stafford County: Black-Marshall and Armer's Geisler 1, c nw se 24-22s-13w, dr 380 ft.

KENTUCKY

Henderson County: Ind Farm Bureau's Powell 2, 11-N-24, lcn.

McLean County: Maires & Phillips' Goodloe 1, 21-M-27, lcn.

NORTH LOUISIANA

Tensas Parish: Sohio Producing Co.'s Penrod-Jordon 1, sw se 8-11n-10e (two mile outpost Holly Ridge field Tuscaloosa discovery), lcn.

Webster Parish: S. J. Beene's Adkins 1, nw sw 32-23n-9w, lcn.

MICHIGAN

Ionia County: H. H. Heinig's Miller 1, ne se se 36-8n-5w, dr.

Mecosta County: American Production Co.'s Compson 1, c ne 6-16n-7w, dr.

Chapman Oil Co.'s State 1, e½ se se 29-16n-9w, dr.

Chapman Oil Co.'s Stehower 1, e½ se ne 29-13n-8w, rig.

Osceola County: C. W. Teater and Americrudes' Nelson 1, s½ se sw 24-19n-10w, rig.

NEW MEXICO

Lea County: Continental et al's Skaggs 2-B-23, c sw nw 23-20s-37e, lcn 11,000-ft Eilenburger test.

OKLAHOMA

Comanche County: W. E. Henderson's Allison 1, c ne se 9-1n-11w, lcn.

Texas' School Land 1, sw sw sw 16-4n-10w, dr.

Hughes County: Northern Ordnance's McClain 1, nw nw se 4-5n-11e, lcn.

Payne County: Skelly's Simpson 1, sw sw se 30-19n-5e, sp.

Pottawatomie County: Deep Rock's Forsee 1, sw sw se 11-11n-3e, lcn.

EAST TEXAS

Robertson County: A. G. Hill-H. L. Hunt's W. C. Anderson-Magnolia 1, 330 ft from se and 330 ft from m/e/w line of 245-ac tr, Joseph Webb sur 51, 3 mi nw Calvert, lcn for Travis Peak test.

Rusk County: Texas Co.'s Christian 1, 1000 ft snl and 3600 ft wel of Young Settoon sur, 3 miles w Tatum, lcn Travis Peak test.

NORTH TEXAS

Archer County: G. E. Kadane & Sons-Sunray Oil Co.'s J. R. Parkey 1-A, 2020 ft wel and 2300 ft nsl SP 1, A-419, lcn 1700-ft test.

TEXAS PANHANDLE

Donley County: Stanolind - Texas Co.'s Broome 1, c nw sw H&GN 46, blk 20, 7 mi nw Memphis, lcn 6500-ft test.

SOUTHWEST TEXAS

Duval County: Henderson et al's North 1, sec 17 Sweden fr lots sbdn Agua Poquita gr, 1½ mi w Benavides field, 1¼ mi n Southland field, rigged up.

McMullen County: Stanolind's Henry 1, Noah Scott sur, 5 mi nw Tilden, moving in for 6000-ft test.

LOWER TEXAS GULF COAST

Bee County: Rowe et al's Moore 1, 6 mi e Clareville, Michael O'Connell sur, dr.

Victoria County: Barnsdall's Mitchell 1, s Keeran field, Placedo Benavides gr, lcn 6000-ft test.

WEST CENTRAL TEXAS

Brown County: A. J. Rife et al's Perkinson 1, 660 ft out swc sec 72, Brown CSL sur, lcn 2700-ft test.

Shackelford County: E. H. R. Sabens et al's W. H. Green 1, 500 ft nsl and 220 ft wel of ne¼ T&P 68, blk 12, lcn 1600-ft test.

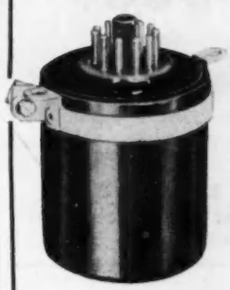
WEST TEXAS

Ector County: Grisham-Hunter Corp.'s Cowden 1-10, c se se T&P 10, blk 45, T-2-N, lcn 6500-ft Clear Fork test.

Hockley County: Brown & Wheeler's French 1, 660 ft out swc lab 22, leag 74, Haskell CSL sur, lcn 6500-ft Clear Fork test.

Howard County: John B. Hawley, Jr.-Northern Ordnance's Cook 1, c se nw T&P 23, blk 34, T-1-N, machine.

GEOPHYSICAL TRANSFORMERS



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You may have surplus equipment that is urgently needed by some other operator. See the
TRADING POST SECTION
Page 64 of this Issue

Squeaks from the Bull Wheel

Double Duty

The chief constable of a small town was also an expert veterinary surgeon. One night the telephone rang. The chief constable's wife answered.

"Is that Mr. Jenkins?" asked an agitated voice.

"Do you want my husband in his capacity as veterinary surgeon or as chief constable?"

"Both, madam," came the reply. "We can't get our bulldog to open his mouth, and there's a burglar in it."

Not Always So

I tell you, sir, long hair does make a man look intelligent.

I disagree. My wife took one off my coat this morning, and I looked foolish.

Appropriate Action

A gentleman living in the Southwest set about making a financial wizard of himself by means of a correspondence course. When he had finished the lessons he proceeded to play the grain market in the manner laid down by the "expert."

When his transactions had been completed he wrote to his erstwhile teacher.

"You told me to let you know if I got into trouble, and you would tell me how to act. Well, I done just as you told me about buying winter wheat, and I am now busted. How shall I act?"

Promptly came back the reply:

"Act like you are busted."

One Way to Know

Mother: "Now, before you get serious with him, be sure he is always kind."

Daughter: "Oh, I'm sure he is. I heard him say he put his shirt on a horse that was scratched."

Service Minded

"Now," said the teacher, "what did God give to Moses on the high mountain?"

"The ten commandos!"

Easy On Him

"When you quarreled today, you let your husband have the last word. That was very unusual."

"I know it. But I want to give him a little pleasure. It's his birthday."

Circumstantial Evidence

"Smith," said the restaurant manager to a waiter, "why did that man from table No. 5 leave so suddenly?"

"Well, sir," said the waiter, "he sat down and asked for sausage, and I told him we were out of them; but if he would care to wait a few minutes I could get the cook to make some."

"Well," said the manager, "what then?"

"I went to the kitchen," resumed the waiter, "and accidentally trod upon the dog's tail, and of course it yelped out. And suddenly the man got up and left."

Misunderstood

Why so downcast, honeychild?

My soldier love has not been true to me. He promised that he would not even look at any of those foreign girls, but I see by this morning's paper he's been decorated for gallantry.

Jokes of the Wrong Type

These are among the typographical errors that have recently been noted, maybe in your home-town paper:

The manager of the cleaning and pressing establishment testified that Miss Green's goat was cleaned and pressed and returned to her undamaged.

While hunting, Will Burns was seriously injured when the gin of a companion accidentally exploded. He will recover.

Mrs. Schlutter, a Salvation Army band cornetist, said she placed her hat and instrument on a table. When she turned around, she added, her hat was there, but her corset had disappeared.

The banquet was attended by several prominent townsmen, and the guest speaker gave a thumbnail sketch of their past wives, up to the present time.

Walking home after the severe electrical storm last night, Michael Reardon came in contact with a live wife dangling from an uprooted tree and was knocked several feet. He sustained only minor shock and bruises.

The popular stage play of a few seasons ago, The Women, will be presented Friday and Saturday nights by the West Hollywood Women's Club, the cats being all female.

In the Preserves Contest held in the Baptist Church basement Wednesday night, Miss Wanda Teasdale won first prize with her home-made tickles.

Mr. and Mrs. Delos are happy to announce that the storm visited their home Tuesday morning and left a nine-pound baby boy.

Street Scene—Hollywood

"I like your husband's new suit, dear."

"It isn't a new one."

"Well, something's different."

"Yes, it's a new husband."

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GARLOCK

Notes for the Equipment Buyer and User

Portable Diesel Power Unit

THE COOPER-BESSEMER CORPORATION

The Cooper-Bessemer Corporation, Mount Vernon, Ohio, has announced a method of conversion and adaptation of a modern, gas-fueled stationary type engine, to a portable diesel power unit complete for field service.

The idea was worked out by engineers of a major pipe line company in Oklahoma, and answers a critical need by supplying convenient temporary pumping service for transporting crude oil through the trunk line to quickly provide an increase from 30,000 to 40,000 barrels per day. The system can also be used for transporting crude oil from new wells through temporary feeder lines to main trunk lines, and can also be used as a temporary unit in the event of failure of a trunk unit.

The complete, heavy-duty gas unit, one of six Cooper-Bessemer Type EN, 8-cylinder stationary gas engines previously installed at a pumping station, was quickly converted to oil fuel operation. Mounted on a base of 18-inch "I" beams, complete with all auxiliary equipment, it can be quickly transported to new field locations and placed immediately in service.

The effectiveness of this field service idea is obtained by the simple hook-up necessary to put the converted unit into operation. Once it is placed in the desired position, the procedure consists merely of making the crude oil intake and discharge connections. Then the unit is ready to handle at least 700 barrels of oil per hour at 700 pounds pressure.

In making the change, the gear increaser originally used with the gas unit was retained; and a new pump was installed. Starting equipment is of the compressed-air type driven by the small engine mounted at the front operating side of the diesel, with tank for air storage located under the operator's platform.

A direct current generator is fitted at the flywheel and of the engine to furnish power for lighting.

The heat exchanger, mounted along the length of the base skid is connected from the discharge of the crude oil pump, to the crude oil feeder line, the oil acting as the cooling medium for the exchanger cooling the jacket water.

To complete this self-contained unit, are two Nugent waste pack oil filters, for filtering fuel oil and one for filtering lube oil, and two fabricated boxes. One box holds the necessary tools and spare parts and the other is used for storage of renewal waste packs, wiping rags and other essential supplies.

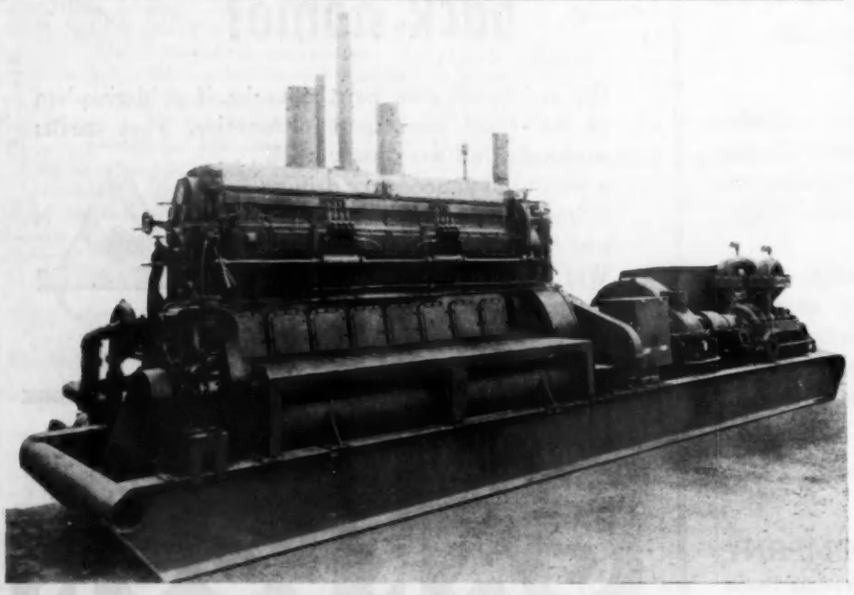
Timken Company Names New Distributors

The Timken Roller Bearing Company, Canton, Ohio, announces the following new distributors for graphic steels:

Coulter-Sibbetts Steel Company, 1801 East Slauson, Los Angeles 11, California, successor of Coulter-Sibbett and Burke, now dissolved, will cover the territory of Arizona and Southern California.

Earle M. Jorgensen Company, distributors in Texas and Oklahoma, with headquarters at 10510 South Alameda Street, Los Angeles, will also include Arizona and Southern California in its territory.

Claude M. Livermore has recently become associated with Earle M. Jorgensen Company.

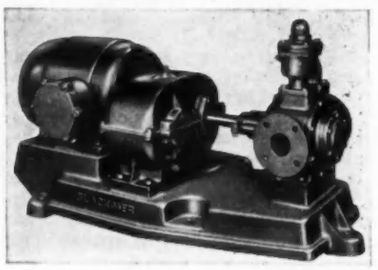


Cooper-Bessemer Diesel-Powered Portable Pump

Rotary Pump

BLACKMER PUMP COMPANY

Blackmer Pump Company, Grand Rapids 9, Michigan, has released information covering a new series of rotary pumps with anti-friction bearings for handling viscous or non-viscous liquids having lubricating properties.



Blackmer Rotary Pump with Anti-Friction Bearings

Capacities range from 10 to 750 gallons per minute at pressures up to 150 pounds. The anti-friction bearing design has the advantage of reducing power requirements and permitting higher operating pressures.

The pumps are available in all-iron or in bronze-fitted construction, with or less removable liners, also with steam-jacketed heads, and in all standard drive, including gearhead motor.

W-K-M Company Awarded M Pennant at Houston

W-K-M Company, Houston, was awarded the Maritime M pennant for efficiency in wartime production of valves last week. The award was made by L. R. Sanford of New Orleans, Gulf Coast director of the commission. In presenting the pennant, he said: "You not only have produced your important valves in scheduled time, but when necessary and requested, before the scheduled date of delivery."

Exhaust Pyrometer

Illinois Testing Laboratories, 420 North La Salle Street, Chicago 10, Illinois, has issued a bulletin, No. 2819 on Alnor exhaust pyrometers. These instruments are said to be a dependable guide to safe and efficient operation of Diesel engines. Installed on an engine, any departure from normal operation is indicated at once in the exhaust temperatures. Also routine logging of temperatures gives the operator prompt warning so that immediate steps can be taken to correct the difficulty.

Level Control

Photoswitch Incorporated, Cambridge, Massachusetts, has issued a bulletin on its floatless level control. Photoswitch electronic level controls are available to provide single level indication and control, on-and-off pump control at two levels, boiler-feedwater control and tank condensate signals. Copies may be had by asking for Sheet 1100.

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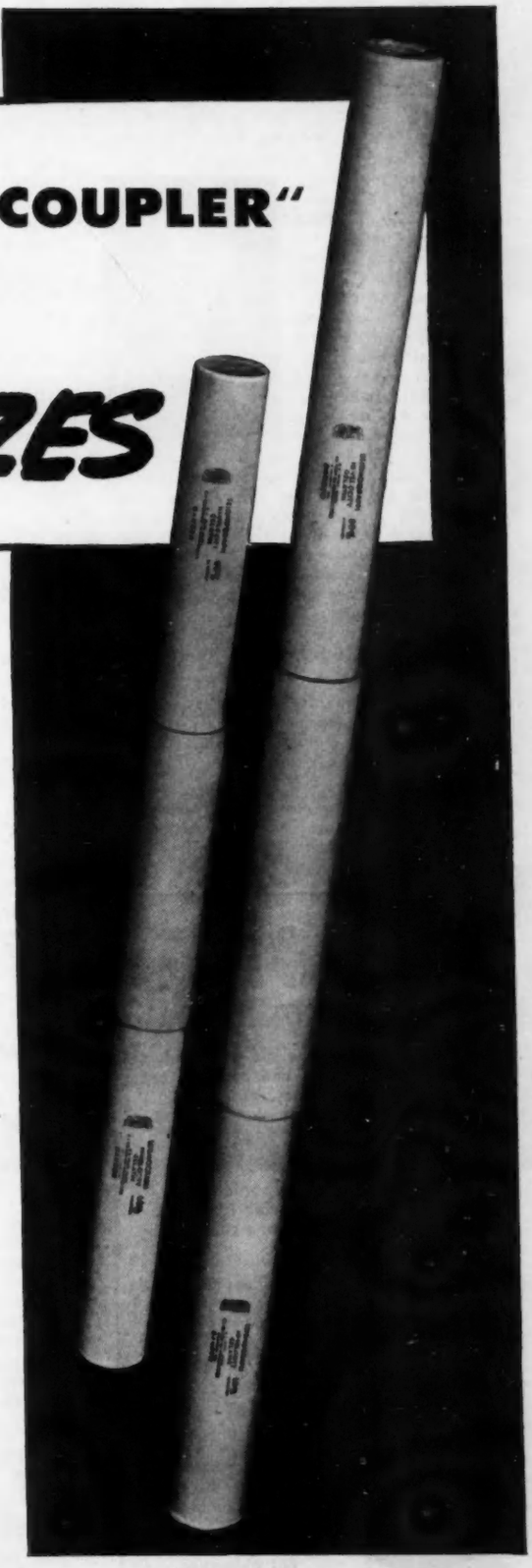

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Men in the Industry's News

REX G. BAKER, who has been a member of the legal staff of the Humble Oil & Refining Company since 1920, has been elevated to director and general counsel, succeeding E. E. Townes, whose retirement as director, vice president and general counsel recently was announced. Baker assumed his new duties on September 11.

For the past six years he served as assistant to Townes, whose retirement leaves H. C. Weiss, president, as the only remaining member of the original body of company officers. Baker had previously been in charge of all legal work of the company outside the trial division, and was legal advisor in all phases of the company's business. For several years he has also been director of Humble Pipe Line Company.

ROBERT L. CROOK has re-entered the employ of Oil Well Supply Company, at San Antonio, Texas. Bob represented "Oilwell" in South America from 1933 to 1937. He had previously served as driller for British interests in Burma and for American companies in Argentina, Bolivia, Venezuela and Java, and as drilling superintendent in Borneo.

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AMERICAN SAND-BANUM COMPANY, Inc.

9 Rockefeller Plaza, New York City

C. C. POPE, Rio Grande Valley land man for Sun Oil Company, has been transferred from McAllen to Midland, where he will serve as land man in West Texas and New Mexico after several years absence. W. J. Hardy, land man in the company's San Antonio office, succeeds Pope and in turn will be relieved by A. Jack Viets, scout and lease buyer at Brenham, Texas. Jim Buckley, scout and land man in company's Tulsa division, takes over the Brenham assignment.

CARY P. BUTCHER, West Texas district geologist for Tide Water Associated Oil Company, has resigned to operate as a consultant at Midland. R. E. LeBlond, member of the company's Midland staff, has succeeded Butcher.

C. R. McKNIGHT has resigned as head of the valuation and reserve department of Arkansas Fuel Oil Company at Shreveport, to become geologist in the reserves department of the Petroleum Administrator of War office at Washington.

J. W. DOSS, scout and landman for American Republics Corporation in West Texas for 14 years, has resigned to operate on his own, retaining residence at San Angelo. He will be succeeded by E. W. Cookenboo, scout, working out of home office at Houston.

GEORGE WEINSCHEL, Corsicana, Texas, and Vandalia, Illinois, producer, now is a lieutenant in the Army Ordnance Department.

THOMAS J. CASEY has been made manager of the land department of the California division of Barnsdall Oil Company. He will continue to serve as counsel for the division in which capacity he has acted since 1932.

WILLIAM J. CONLEY has been appointed a consulting engineer for The Lincoln Electric Company, with headquarters in Cleveland, Ohio. He will act as a welding consultant for various industries, handling problems on mechanical and structural design utilizing welding, as well as metallurgical problems involving welding processes. He was former chairman of the Engineering Department of the University of Rochester.

E. A. PHOENIX has been appointed assistant manager of the Transite asbestos pipe department of Johns-Manville, and will make his general headquarters in New York. He has been with the company since 1928 and after serving in various sales and advertising capacities, he was made assistant sales promotion manager in 1936. In May, 1942, he was transferred to the priorities department, a position which he held until his recent appointment. He will specialize in field sales and educational phases of the business.

HOWARD R. AUERSWALD, 51, assistant superintendent of production for Gulf Oil Corporation at Tulsa, died September 4.

T. H. McSHEEHY has been appointed sales manager of the Wire Rope Division of Wickwire Spencer Steel Company, with headquarters in New York, where he will supervise wire rope sales throughout the country. J. A. Old, who has been with the company a number of years, succeeds McSheehy as Pacific Coast sales manager.

McSheehy first came with Wickwire Spencer in 1923. During this time he has served in a variety of executive sales capacities, including hardware products manager, structural products manager, Chicago district manager and Pacific Coast manager, which position he held at the time of his new appointment. He received a military education and served in the last war as a lieutenant in the United States Navy. Before joining Wickwire Spencer, he was with the American Steel & Wire Company.

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